



# Knowledge and Attitudes About Delta-9-tetrahydrocannabinol (THC) Impacts Real-world Practice in an International Group of Rheumatologists



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**BACKGROUND**

The legalization of cannabis is increasing across the United States, with 24 states allowing recreational use and 38 states legalizing medical cannabis. This shift presents both opportunities and challenges for physicians, particularly in the field of rheumatology. Cannabis may provide symptom relief for patients with rheumatologic diseases due to its anti-inflammatory properties and its ability to alleviate pain. Consequently, a growing number of patients are turning to cannabis as a supplemental therapy and seeking guidance from their rheumatologists. However, many physicians feel ill-equipped to have informed discussions about cannabis use with their patients, as it is often not included in medical education or continuing education. There is significant variation in attitudes towards cannabis within the medical community, with some professionals advocating for its use and others remaining skeptical. As the legalization of cannabis continues to expand, it becomes increasingly important for healthcare professionals to stay informed about its potential therapeutic benefits, risks, and regulatory implications to better support patient care.

**METHODS**

- A cross-sectional survey was conducted between November 12, 2023, and April 10, 2024, targeting an international group of rheumatologists and allied health providers.
- The survey included 11 questions on THC attitudes (answers: yes, no, unsure; Figure 2), 6 knowledge-based questions on cannabis (only one correct answer per question; Table 2), and 4 real-world practice questions (answers: yes or no; Figures 3 & 4).
- Demographic data collected: specialty, gender, age, country of practice, and years of experience (Table 1).
- Responses to the attitudes questions in Figure 2 were analyzed using cluster analysis
- Knowledge scores [range 0 (no correct answers) to 6 (all correct answers)] were dichotomized at the mean, enabling comparison between high ( $\geq 3$ ) and low knowledge( $<3$ ) groups.
- Chi-square tests were used to examine associations between knowledge levels, attitudes, and practices.

**RESULTS**

- 215 respondents participated, 86% of whom were rheumatologists; 62% were female, and 51% were aged 50 or older, 81% were white, 68% live in a country or state in which cannabis is legal, 40% practiced 11-25 years (Table 1).
- Cluster analysis categorized respondents into three groups which were named "Progressive" (e.g., more liberal; 31.9%), "Traditional" (e.g., more conservative; 40.0%) and "Unsure" (e.g. answered unsure to most questions; 28.1%) groups. (Figure 1).
- 68.7% of "Progressive" respondents felt comfortable discussing cannabis with patients, compared to 56.6% in the "Traditional" group and 54.2% in the "Unsure" group (N.S.; Figure 2).
- 89.6% of "Progressive" respondents believed cannabis could be an opioid alternative, compared to 48.8% of "Traditional" and 55.9% of "Unsure" respondents (P<0.001; Figure 2).
- In the "Progressive" group, 58% recommended CBD for symptom control, significantly higher than the 38% in the "Traditional" group and 48% in the "Unsure" group (P<0.05); Figure 2).
- The mean knowledge score was 2.9 with 60% of respondents in the high knowledge group.
- Being in the high knowledge group was most common among the "Progressive" cluster (73%), compared to the "Traditional" (57%) and "Unsure" (49%) clusters (P<0.05) (Table 2).
- There is significant variability in knowledge and attitudes regarding cannabis among rheumatologists and allied health providers.
- Physicians with higher knowledge were more comfortable talking to patients about cannabis (Figure 3).
- Higher knowledge was associated with greater comfort in discussing and recommending cannabis to patients.
- The "Progressive" group was more open to recommending cannabis, particularly as an alternative to opioids for chronic pain.
- Targeted education is necessary to address knowledge gaps and improve physician-patient discussions on cannabis use in rheumatology.

| Table 1: Demographics                         |                           |            |
|---|---------------------------|------------|
| Characteristic                                | Category                  | N (%)      |
| Specialty                                     | Rheumatologist            | 185 (86.0) |
|   | Other                     | 30 (14.0)  |
| Country                                       | US                        | 80 (38.6)  |
|   | Canada                    | 97 (46.9)  |
|   | Israel                    | 25 (12.1)  |
|   | Other                     | 5 (2.4)    |
|   |                           |            |
| Gender  | Female                    | 135 (61.6) |
|   | Male                      | 82 (37.4)  |
|   | Other                     | 2 (0.9)    |
| Age   | 35 or younger             | 31 (14.3)  |
|   | 36-49                     | 76 (35.0)  |
|   | 50 or older               | 110 (50.7) |
|   |                           |            |
| Ethnicity                                     | White                     | 169 (80.5) |
|   | Asian or Pacific Islander | 30 (14.3)  |
|   | Other                     | 16 (5.2)   |
| Years of practice                             | <5 years                  | 34 (15.5)  |
|   | 5-10 years                | 34 (15.5)  |
|   | 11-25 years               | 87 (39.7)  |
|   | 25+ years                 | 64 (29.2)  |
|   |                           |            |
| Is cannabis legal in your state (or country)? | Yes                       | 148 (68.2) |
|   | No                        | 60 (27.6)  |
|   | Unsure                    | 9 (4.1)    |

| Table 2: Knowledge questions by Attitudes Clusters   |                | Cluster Designation N (%) |                  |                  |                   |
|--|----------------|---------------------------|------------------|------------------|-------------------|
| Correct answers are bolded   | Answer         | Progressive               | Unsure           | Traditional      | Total             |
| Which cannabinoid makes you high? (P<0.05)   | THC            | <b>62 (92.5)</b>          | <b>45 (76.3)</b> | <b>71 (84.5)</b> | <b>178 (84.8)</b> |
|  | CBD            | 1 (1.5)                   | 3 (5.1)          | 3 (3.6)          | 7 (3.3)           |
|  | Unsure         | 0 (0)                     | 8 (13.6)         | 4 (4.8)          | 12 (5.7)          |
|  | Both           | 4 (6)                     | 2 (3.4)          | 6 (7.1)          | 12 (5.7)          |
|  | Neither        | 0 (0)                     | 1 (1.7)          | 0 (0)            | 1 (0.5)           |
| Which cannabinoid has therapeutic benefits that can offer pain relief? (P<0.001)                               | THC            | 2 (3)                     | 4 (6.8)          | 5 (6.0)          | 11 (5.2)          |
|  | CBD            | 16 (23.9)                 | 18 (30.5)        | 34 (40.5)        | 68 (32.4)         |
|  | Unsure         | 0 (0)                     | 8 (13.6)         | 2 (2.4)          | 10 (4.8)          |
|  | <b>Both</b>    | <b>49 (73.1)</b>          | <b>28 (47.5)</b> | <b>40 (47.6)</b> | <b>117 (55.7)</b> |
|  | Neither        | 0 (0)                     | 1 (1.7)          | 3 (3.6)          | 4 (1.9)           |
| Most cannabis strains available today have been selectively bred for high concentrations of which cannabinoid? | THC            | <b>33 (49.3)</b>          | <b>21 (36.2)</b> | <b>34 (41)</b>   | <b>88 (42.3)</b>  |
|  | CBD            | 18 (26.9)                 | 16 (27.6)        | 18 (21.7)        | 52 (25)           |
|  | Unsure         | 5 (7.5)                   | 13 (22.4)        | 14 (16.9)        | 32 (15.4)         |
|  | Both           | 10 (14.9)                 | 4 (6.9)          | 14 (16.9)        | 28 (13.5)         |
|  | Neither        | 1 (1.5)                   | 4 (6.9)          | 3 (3.6)          | 8 (3.8)           |
| Which cannabinoid is associated with reducing seizures in patients who suffer from epilepsy?                   | THC            | 12 (17.9)                 | 9 (15.5)         | 15 (18.1)        | 36 (17.3)         |
|  | <b>CBD</b>     | <b>27 (40.3)</b>          | <b>20 (34.5)</b> | <b>26 (31.3)</b> | <b>73 (35.1)</b>  |
|  | Unsure         | 20 (29.9)                 | 23 (39.7)        | 33 (39.8)        | 76 (36.5)         |
|  | Both           | 6 (9)                     | 3 (5.2)          | 6 (7.2)          | 15 (7.2)          |
|  | Neither        | 2 (3)                     | 3 (5.2)          | 3 (3.6)          | 8 (3.8)           |
| Is hemp legal in the US?   | No             | 9 (13.6)                  | 16 (27.6)        | 25 (29.8)        | 50 (24)           |
|  | <b>Yes</b>     | <b>57 (86.4)</b>          | <b>42 (72.4)</b> | <b>59 (70.2)</b> | <b>158 (76)</b>   |
| How many cannabinoids are in the cannabis plant?   | <10            | 1 (1.5)                   | 3 (5.1)          | 2 (2.4)          | 6 (2.9)           |
|  | 10-50          | 4 (6)                     | 4 (6.8)          | 6 (7.2)          | 14 (6.7)          |
|  | 51-100         | 6 (9)                     | 3 (5.1)          | 4 (4.8)          | 13 (6.2)          |
|  | <b>&gt;100</b> | <b>16 (23.9)</b>          | <b>14 (23.7)</b> | <b>26 (31.3)</b> | <b>56 (26.8)</b>  |
|  | Unsure         | 40 (59.7)                 | 35 (59.3)        | 45 (54.2)        | 120 (57.4)        |

**Key Insights**

- Knowledge Gaps Impacting Clinical Practice:** While 60% of respondents had high knowledge about cannabis, 40% demonstrated significant knowledge gaps. These gaps affected their ability to discuss and recommend cannabis as a therapeutic option, highlighting the need for better education and training in this area.
- Diverging Attitudes Towards Cannabis:** The cluster analysis identified three distinct attitude groups ("Progressive," "Traditional," and "Unsure"), with the "Progressive" group being more likely to recommend cannabis and view it as an opioid alternative. In contrast, the "Traditional" and "Unsure" groups were less confident in both discussing and recommending cannabis, showing how attitudes shape clinical decision-making.

