Self-Reported Effectiveness of Cannabis for Arthritis-Related Pain

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Individuals with rheumatic diseases are more likely to find cannabis effective in treating arthritis-related pain when the products contain THC and/or are applied topically.

BACKGROUND

> Pain management remains a significant challenge for individuals with rheumatic diseases (RDs), often causing patients to seek complementary or alternative treatments to traditional medications

> Cannabis has been investigated as a potential option due to its immunomodulatory and analgesic effects, and arthritic pain is a commonly reported reason for cannabis use

> However, little is known about its safety or effectiveness in this population, and existing products are incredibly diverse and often unregulated

> Objective: to assess differences in self-reported effectiveness of cannabis or cannabis-derived products (hereafter simply "cannabis") for the treatment of arthritis-related pain by the presence or absence of tetrahydrocannabinol (THC)

METHODS

> The study population included adults in FORWARD who reported use of cannabis for treating arthritis-related pain

> Participants were categorized into two groups: those who used products containing CBD but not THC, and those who used products containing THC with or without CBD

> Univariate analyses were performed to examine differences between the groups as well as between those who found cannabis effective or ineffective

> Characteristics that varied significantly (chi-square or t-test p<0.05) were included in a multivariable logistic regression model to assess the relationship between the presence of THC and effectiveness of cannabis in treating arthritic pain

RESULTS

> Among 1,718 participants using cannabis for arthritis-related pain, 811 used THC-containing products while 907 used CBD-only products

> In univariate analysis, THC users were significantly more likely to find cannabis effective compared to CBD-only users (62% v 39%, p<0.001; Figure 1)

> THC users were younger, more likely to be male, less likely to use topical cannabis, and more likely to use cannabis for other reasons in addition to pain relief (Table 1)

> After adjusting for confounders, logistic regression showed that participants using cannabis products with THC had significantly higher odds of finding cannabis effective for pain reduction (Figure 2)

> Participants who used topical cannabis or who used cannabis to treat insomnia or anxiety in addition to arthritis-related pain had significantly higher odds of finding cannabis effective, while participants with higher global VAS scores were less likely to find cannabis effective

CONCLUSION

> This study provides valuable insights into the use of cannabis for pain management in individuals with RDs

> These findings suggest that cannabis products containing THC and/or that are applied topically are more likely to be perceived by patients as effective

> These results highlight the importance of considering specific formulations of cannabis products as well as their route of administration when evaluating their therapeutic potential

> Prospective studies, particularly randomized controlled clinical trials, are needed to better understand efficacy and potential risks of cannabis use in this population
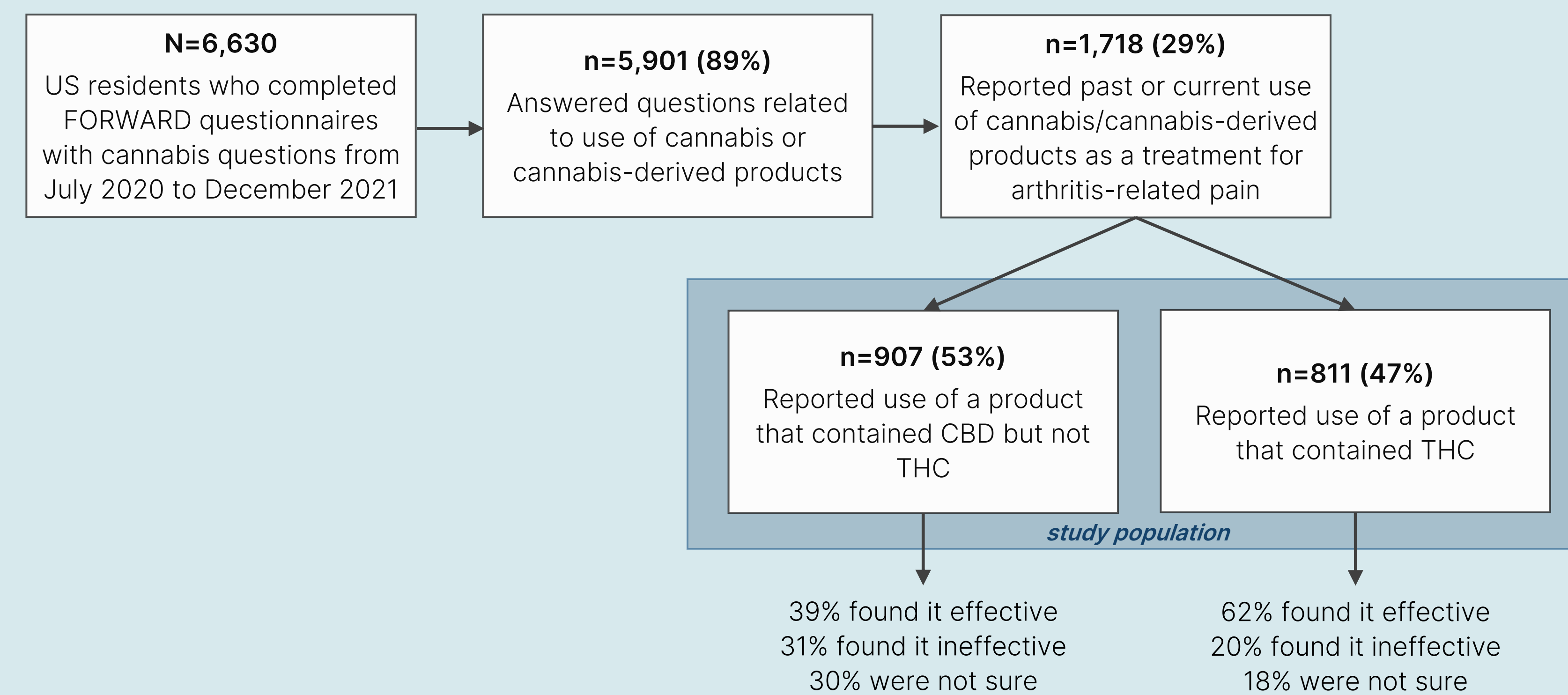

Figure 1. Inclusion criteria and study population selection. The final study population included FORWARD participants living in the US who completed questionnaires from July 2020 to December 2021 and reported using cannabis or cannabis-derived products for the treatment of arthritis-related pain. Participants who reported use of products containing THC were significantly more likely to find the product effective compared to participants who reported the use of CBD-containing products that did not contain THC (chi-square p<0.001).
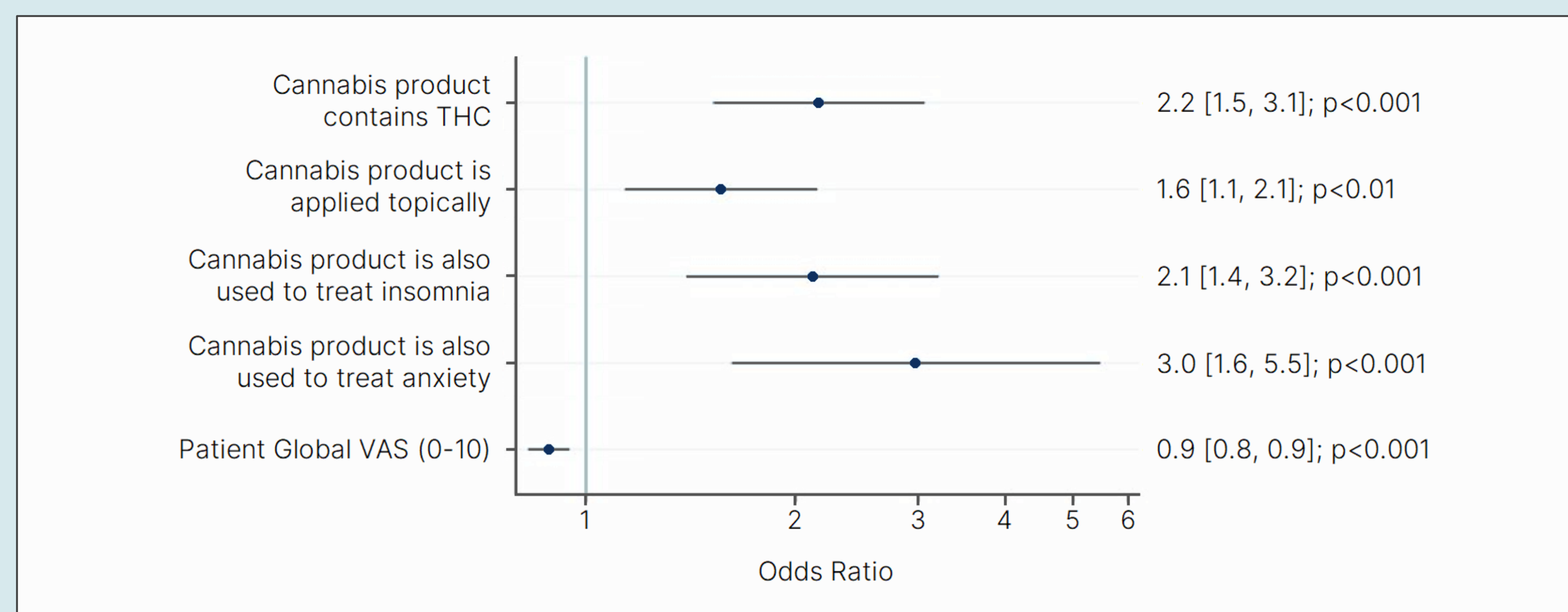

Figure 2. Factors Associated with self-reported effectiveness of cannabis products in treating arthritis-related pain from multivariable analysis. The phrase "cannabis product" is used to describe cannabis or cannabis-derived products that may or may not include tetrahydrocannabinol (THC). The multivariable logistic regression model included all covariates from Table 1 with p<0.05 (age, sex, race, history of smoking cigarettes, state cannabis legality, routes of administration, additional reasons for use, fatigue, and global severity). Statistically significant (p<0.05) covariates are presented with their associated odds ratio [95% confidence interval] and p-value.

Table 1. Characteristics of FORWARD participants who have reported using cannabis or cannabis-derived products to treat arthritis-related pain. Summary statistics are presented by whether the product did or did not contain THC, and by whether the participant reported finding the product effective or not. Significance testing was performed with Student's t-tests or chi-square tests, as appropriate.

	CBD Only n=907	Contains THC n=811	p	Not Effective n=440	Effective n=860	p
Demographics						
Age, years	67.5 (11.4)	62.9 (10.5)	<0.001	66.9 (10.4)	63.9 (11.2)	<0.001
Female, %	89.9	84.6	<0.01	87.3	87.2	0.96
Caucasian, %	91.9	90.5	0.32	93.6	88.9	<0.01
Education, years	14.8 (2.4)	14.8 (2.3)	0.54	14.7 (2.6)	14.7 (2.3)	0.77
History of smoking, %	41.0	59.3	<0.001	48.9	51.4	0.39
BMI, kg/m2	29.4 (7.1)	29.5 (7.3)	0.77	29.5 (7.2)	29.7 (7.5)	0.64
RDCI, 0-9	2.2 (1.6)	2.3 (1.7)	0.09	2.2 (1.6)	2.3 (1.7)	0.50
Primary Diagnosis, %						
Rheumatoid arthritis	62.8	61.4		61.4	62.1	
Osteoarthritis	17.8	15.7		18.4	15.9	
Fibromyalgia	6.3	6.8		7.5	7.1	
Lupus	4.7	5.3	0.23	5.2	4.9	0.74
Psoriatic arthritis	2.2	4.0		2.7	3.1	
Ankylosing spondylitis	0.7	1.4		0.7	1.2	
Other	5.5	5.6		4.1	5.7	
State Cannabis Legality, %						
Not legal	37.7	27.5		32.3	31.4	
Medical only	36.7	39.3	<0.001	38.4	38.0	0.89
Recreational	25.6	33.2		29.3	30.6	
Route of Administration, %						
Smoked	0.4	48.5	<0.001	17.3	30.0	<0.001
Vaped	0.6	17.6	<0.001	4.5	12.5	<0.001
Ingested	47.0	66.9	<0.001	59.8	58.6	0.68
Topical	64.2	51.5	<0.001	51.8	59.8	<0.01
Additional Reasons For Use, %						
Insomnia	9.5	28.4	<0.001	9.3	25.7	<0.001
Anxiety	6.7	22.7	<0.001	5.9	21.0	<0.001
Depression	4.3	13.4	<0.001	4.5	12.1	<0.001
Recreational	0.1	20.5	<0.001	8.4	10.1	0.32
Medications, %						
csDMARD	48.2	44.6	0.13	48.3	45.0	0.28
TNFi bDMARD	18.5	17.7	0.67	16.7	18.1	0.54
nTNFi bDMARD	15.1	14.2	0.63	14.2	13.6	0.78
JAKi	7.0	8.5	0.25	8.8	6.8	0.20
Glucocorticoid	20.1	18.3	0.37	20.4	17.8	0.27
Nonopioid analgesic	47.9	43.9	0.11	45.5	45.5	0.99
Opioid	25.5	28.6	0.17	29.9	25.5	0.09
PROs						
Fatigue VAS, 0-10	4.7 (3.0)	5.0 (3.0)	0.04	4.9 (3.0)	5.0 (3.1)	0.89
Pain VAS, 0-10	4.5 (2.7)	4.7 (2.8)	0.37	4.8 (2.8)	4.6 (2.8)	0.39
Global severity VAS, 0-10	4.1 (2.4)	4.3 (2.6)	0.23	4.5 (2.5)	4.1 (2.6)	0.02
HAQ-II, 0-3	1.0 (0.7)	1.0 (0.7)	0.13	1.0 (0.6)	1.0 (0.7)	0.90
PAS-II, 0-10	4.0 (2.1)	4.0 (2.2)	0.96	4.2 (2.1)	4.0 (2.2)	0.15

Cannabis legality categories were determined as of January 2020. Cannabis use may have been decriminalized and/or available in certain formulations in states in the "not legal" category. CBD=cannabidiol; THC=tetrahydrocannabinol; BMI=Body Mass Index; RDCI=Rheumatic Disease Comorbidity Index; DMARD=disease-modifying antirheumatic drug; csDMARD=conventional synthetic DMARD; TNFi=tumor necrosis factor inhibitor; bDMARD=biologic DMARD; nTNFi=non-TNFi; JAKi=Janus kinase inhibitor; PRO=patient-reported outcome; VAS=visual analog scale; HAQ-II=Health Assessment Questionnaire II; PAS-II=Patient Activity Scale II.

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