Differences in prescribed medicinal cannabis use by cannabinoid product composition: Findings from the cannabis as medicine survey 2020 Australia-wide study

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Acknowledgement of country

I would like to acknowledge the Traditional Custodians of the lands on which we are meeting here today:

I pay my respects to Elders past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of Australia.

I also would like to acknowledge and pay my respects to our Aboriginal and Torres Strait Islander colleagues joining us here today.

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Background (1)

- Medical practitioners have been able to legally prescribe cannabinoids since November 2016 using the compassionate access regulatory pathways (Special Access (SAS) and Authorised Prescriber Schemes)
- Guidelines are available which highlight the evidence available for using prescribed medicinal cannabis to treat a range of conditions (e.g. chronic pain, palliative care, chemotherapy and epilepsy)

BUT…..

- ***In practice, clinicians can prescribe medicinal cannabis for ANY clinical reason as long as they can provide some justification to the regulatory body based on available evidence***

Background (2)

- Prescribed medicinal cannabis products consist of two major cannabinoid products:
    - Tetrahydrocannabinol (THC)
    - Cannabidiol (CBD)
- THC and CBD differ considerably in terms of their:
    - Pharmacological actions
    - Clinical rationale
    - Safety
    - Effectiveness

Background (3)

- **Primary aims of the study**
  - i) To describe the demographics of prescribed medicinal cannabis consumers by cannabinoid product composition
  - ii) To examine how patient-reported cost, patterns and reasons for use differ based on product composition
  - iii) To compare patient reported effectiveness and side-effect profiles of the prescribed products
  - iv) To review the safety profiles of these prescribed products based on current medication use and driving patterns

Methods (1)

- **Study Type:**
  - Online cross-sectional survey. Data was collected via REDCap
- **Eligibility:**
  - To be eligible for inclusion participants had to:
    - i) Be Australian adults
    - ii) Used cannabis for therapeutic or medical reasons within last 12 months
- **Excluded:**
  - Participants who:
    - i) Identified as only using illicit medicinal cannabis
    - ii) Reported prescribed medicinal cannabis varied between batches/unaware of its constituents

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Methods (2)

- **Variables of interest were:**
  - Demographic characteristics
  - Primary medical condition treated by the prescribed cannabinoid
  - Side-effects
  - Improvement in symptoms and concurrent use of other medications over last 12 months
  - Cost of prescribed medicinal cannabis products
  - Time between prescription cannabinoid consumption and driving

Methods (3)

- **Participants were grouped based on <u>prescribed</u> cannabinoid product's composition:**

  i) THC-dominant group

  - These participants received prescribed cannabinoid products containing >98% THC

  ii) Mixed THC-CBD group

  - These participants received prescribed cannabinoid products containing >2% THC AND >2% CBD

  iii) CBD-dominant group

  - These participants received prescribed cannabinoid products containing >98% CBD

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Methods (4)

- **We used various regression models to analyse the data**

  i) ***Gaussian models*** for continuous outcomes (e.g. age, weekly cost of prescribed medicinal cannabis, frequency of use)

  ii) ***Binary logistic regression models*** for binary categorical outcomes (e.g. relationship status and past use of illicit cannabis)

  iii) ***Multinomial logistic regression models*** for multilevel outcomes (e.g. route of administration)

  iv) ***Ordinal regression models*** for ordinal outcomes (e.g. change in symptoms following treatment with prescribed medicinal cannabis)

- Primary predictor of interest was prescribed medicinal cannabis composition

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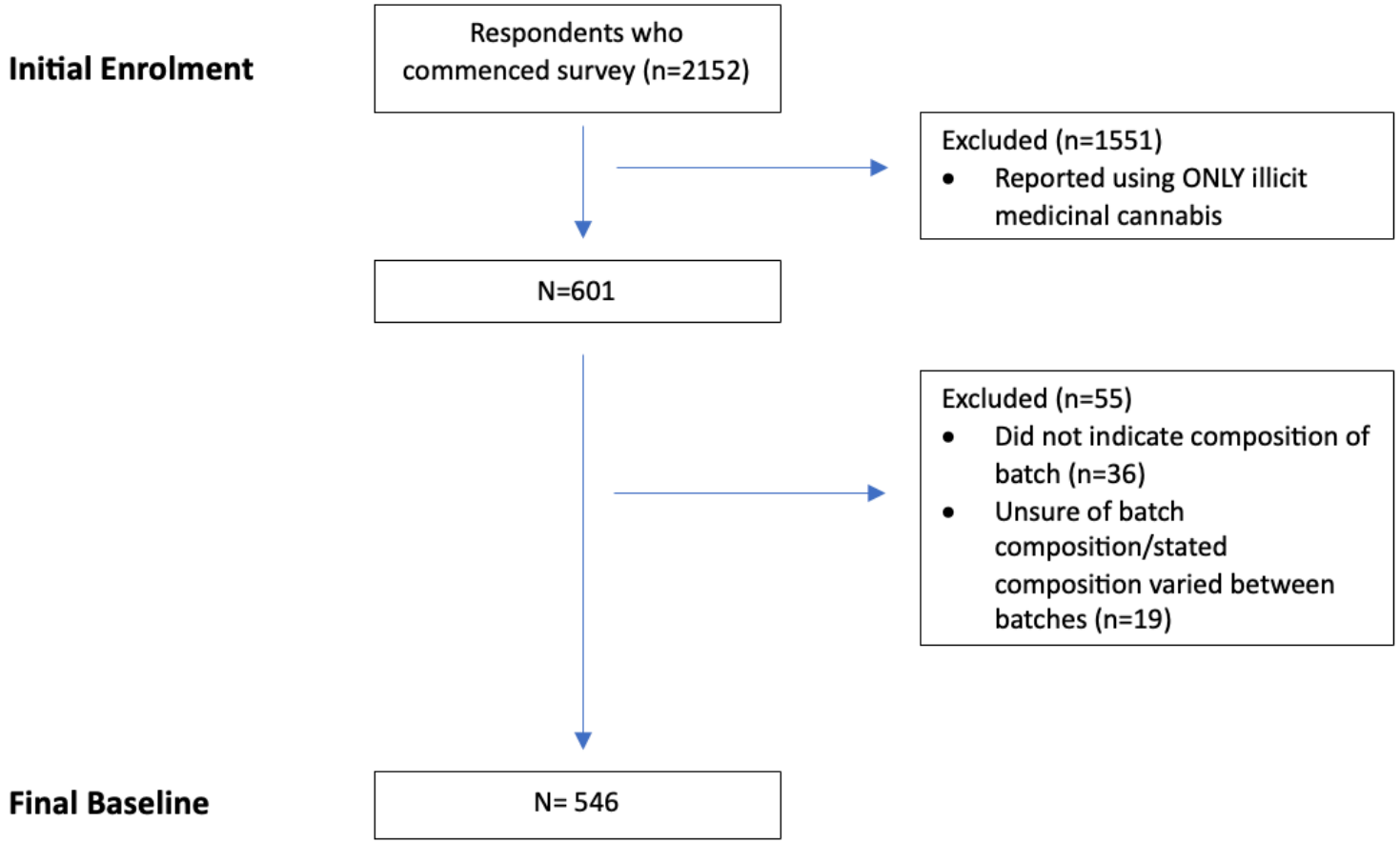
Results: Participation

Figure 1: Flow chart of eligibility requirements for inclusion in the study



Results: Characteristics of prescribed MC users by cannabinoid product composition

Table 1: Characteristics of prescribed medicinal cannabis users by cannabinoid product composition

Characteristic	THC only (TO) (n=144)	Mixed (T+C) (n=227)	CBD only (CO) (n=175)	Total (n=546)	Coefficient	Comparisons estimate (95% CI)	p values
Age, numeric, in y, M (SD)	42.5 (13.2)	46.3 (13.6)	47.5 (14.9)	45.6 (14.1)	Beta	**TO-T+C:-3.8 (-7.4,-0.2)** **TO-CO: -5.0 (-8.8,-1.2)** T+C – CO: -1.2 (-4.6, 2.2)	**0.005** **0.03** 1.00
Gender, binary[b] (not-male [ref] vs male), n (%) male	97 (67%)	133 (59%)	56 (32%)	286 (52%)	Odds ratio	TO-T+C: 1.5 (0.9,2.5) **TO-CO:4.4 (2.5,7.8)** **T+C-CO:3.0 (1.8,5.0)**	0.27 **<0.001** **<0.001**
Highest level of education, binary, (school [ref] vs [tertiary] n (%) **Tertiary**	110 (76%)	189 (84%)	140 (80%)	439 (80%)	Odds ratio	- TO-T+C: 0.7 (0.3,1.2) TO-CO:0.8 (0.4,1.6) T+C-CO:1.2 (0.7,2.3)	 0.31 1.00 1.00
Employment, binary[c], not-employed [ref] vs employed, n (%) employed	61 (42%)	114 (50%)	90 (51%)	265 (49%)	Odds ratio	TO-T+C: 0.7 (0.4,1.2) TO-CO:0.7 (0.4,1.2) T+C-CO:1.0 (0.6,1.5)	0.42 0.32 1.00
Used non-medical cannabis regularly prior to commencing MC, binary, No [ref] vs Yes, n (%) Yes	118 (94%)	194 (94%)	135 (85%)	447 (91%)	Odds ratio	TO-T+C: 1.1 (0.4,3.6) **TO-CO:3.0 (1.0,8.8)** **T+C-CO:2.7 (1.1-6.3)**	1.00 **0.04** **0.02**
Weekly Cost of prescribed medicinal cannabis[e]**, numeric, in $AU, M (SD)**	113.7 (78.4)	68.8 (53.1)	74.2 (49.2)	79.6 (59.1)	Beta	**TO-T+C: 45.0 (20.8, 69.1)** **TO-CO: 39.6 (16.2, 63.0)** T+C-CO: -5.4 (-24.4, 13.6)	**<0.001** **<0.001** 0.58
Route of Administration, categorical[f], oral [ref], n (%) **Vaporiser** **Inhaled**	69 (50%) 16 (12%)	45 (20%) 12 (5%)	2 (1%) 0 (0%)	116 (22%) 28 (5%)	Odds ratio	 **TO-T+C: 4.8 (3.0, 7.8)** **TO-CO: 109.2 (25.91, 460.42)** **T+C-CO: 22.8 (5.4,95.3)** **TO-T+C: 4.2 (1.9, 9.4)** TO-CO: *Not enough data* T+C-CO: *Not enough data*	 **<0.001** **<0.001** **<0.001** **0.001** NA NA
Frequency of use, numeric, days used in past 28 days, M (SD)	22.8 (9.2)	23.3 (8.4)	22.5 (9.4)	22.9 (8.9)	Beta	TO-T+C: -0.5 (-2.9,1.9) TO-CO: 0.3 (-2.2, 2.9) T+C-CO: 0.8 (-1.5, 3.1)	1.00 1.00 1.00

Results: Primary reasons for prescribed MC

Table 2: Main reasons for use of prescribed medicinal cannabis users by cannabinoid product production composition

Indication	THC only (TO) (n=144)	Mixed (T+C) (n=227)	CBD only (CO) (n=175)	Comparisons estimate OR (95% CI)[r]	Adjusted P value
Pain (total), binary, No [ref] vs Yes, n(%) Yes (n=263)	75 (29%)	111 (42%)	77 (29%)	TO-T+C: 1.1 (0.6,1.8) TO-CO: 1.3 (0.7,2.3) T+C-CO: 1.2 (0.7,2.6)	1.00 0.73 0.92
MHSU[c] (total), binary, No [ref] vs Yes, n(%) Yes (n=133)	32 (24%)	52 (39%)	49 (37%)	TO-T+C: 0.9 (0.5,1.7) TO-CO: 0.7 (0.4,1.3) T+C-CO: 0.8 (0.4, 1.3)	1.00 0.49 0.70
Neurological disorder, binary, No [ref] vs Yes, n(%) Yes (n=34)	7 (21%)	16 (47%)	11 (32%)	TO -T+C: 0.6 (0.2,2.0) TO-CO: 0.7 (0.2,2.4) T+C-CO: 1.1 (0.4, 3.0)	1.00 1.00 1.00
Sleep, binary, No [ref] vs Yes, n (%) Yes (n=29)	11 (38%)	9 (31%)	9 (31%)	TO -T+C: 1.9 (0.6,5.9) TO-CO: 1.5 (0.5,4.5) T+C-CO: 0.8 (0.2, 2.4)	0.47 1.00 1.00
Gastrointestinal disorder, binary, No [ref] vs Yes, n (%) Yes (n=8)	1 (13%)	5 (63%)	2 (25%)	TO -T+C: 0.3 (0.02,4.2) TO-CO: 0.6 (0.03,11.1) T+C-CO: 2.0 (0.3, 14.7)	0.82 1.00 1.00
Cancer, binary, No [ref] vs Yes, n (%) Yes (n=9)	2 (22%)	6 (67%)	1 (11%)	TO -T+C: 0.5 (0.07,3.6) TO-CO: 2.4 (0.1,44.9) T+C-CO: 4.7 (0.4, 63.6)	1.00 1.00 0.46
Other, binary, No [ref] vs Yes, n (%) Yes (n=22)	7 (32%)	7 (27%)	9 (41%)	TO -T+C: 1.6 (0.4,5.9) TO-CO: 0.9 (0.3,3.2) T+C-CO: 0.6 (0.2, 2.0)	1.00 1.00 0.90

- Pain and MHSU were the two most common primary reasons indicated by participants for prescribed medicinal cannabis
- There were no significant differences in likelihood of patients being prescribed any of the three MC compositions to manage above umbrella presentations

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Results: Side effects

Table 3: Most commonly reported side effects in participants receiving prescribed MC

Side Effect	THC containing products (n=313)	CBD dominant products (n=152)	Total (n=465)	Coefficient	Comparisons estimate (95% CI)	p-values
Dry Mouth, No [ref] vs Yes, n(%)	197 (63%)	64 (42%)	261 (56%)	Odds Ratio	**THC-CO: 2.3 (1.6, 3.5)**	**<0.001**
Drowsiness, No [ref] vs Yes, n(%)	179 (57%)	60 (39%)	239 (51%)	Odds Ratio	**THC-CO: 2.0 (1.4,3.0)**	**<0.001**
Fatigue, No [ref] vs Yes, n(%)	88 (28%)	41 (27%)	129 (28%)	Odds Ratio	THC-CO: 1.1 (0.7, 1.6)	0.80
Eye Irritation, No [ref] vs Yes, n(%)	92 (29%)	21 (14%)	113 (24%)	Odds Ratio	**THC-CO: 2.6 (1.5, 4.4)**	**<0.001**
Anxiety, No [ref] vs Yes, n(%)	55 (18%)	32 (21%)	87 (19%)	Odds Ratio	THC-CO: 0.8 (0.5, 1.3)	0.37
Dizziness, No [ref] vs Yes, n(%)	61 (19%)	21 (14%)	82 (18%)	Odds Ratio	THC-CO: 1.5 (0.9, 2.6)	0.14
Bad Taste, No [ref] vs Yes, n(%)	47 (15%)	24 (15%)	71 (15%)	Odds Ratio	THC-CO: 0.9 (0.6, 1.6)	0.83
Confusion, No [ref] vs Yes, n(%)	42 (13%)	17 (11%)	59 (13%)	Odds Ratio	THC-CO: 1.2 (0.7, 2.2)	0.50

- Dry mouth and drowsiness were the two most commonly reported side-effects.
- Participants on prescribed THC-containing products were significantly more likely to experience dry mouth, drowsiness and eye irritation than those on CBD-dominant products

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Results: Perceived effect of prescribed medicinal cannabis on main condition

Table 4: Reported improvement in main condition: comparing prescribed cannabinoids using PGIC scores

Degree of Improvement in main condition	THC only (TO) (n=144)	Mixed (T+C) (n=227)	CBD only (CO) (n=175)[a]	Odds of a greater degree of improvement	Adjusted p values
Pain, numeric, M (SD)	6.1 (0.8)	6.1 (0.9)	5.8 (0.9)	TO-T+C: 0.6 (0.3, 1.3) TO-CO: 1.3 (0.6,2.9) **T+C-CO: 2.2 (1.1,4.7)**	0.28 1.00 **0.03**
MHSU[b] numeric, M (SD)	6.4 (0.7)	6.2 (1.0)	5.9 (1.0)	TO-T+C: 1.5 (0.5,4.1) **TO-CO: 3.1 (1.1,9.0)** T+C-CO: 2.1 (0.9,5.3)	1.00 **0.03** 0.14
Anxiety, numeric, M (SD)	6.3 (0.7)	6.5 (0.6)	5.9 (0.9)	TO-T+C: 0.6 (0.2,2.3) TO-CO: 2.8 (0.8,10.3) **T+C-CO: 4.5 (1.4,14.9)**	1.00 0.15 **0.007**
Depression, numeric, M (SD)	5.8 (0.5)	6.2 (0.8)	6 (0)	TO-T+C: 0.2 (0.0,7.5) TO-CO: 0.5 (0.0,71.8) T+C-CO: 2.2 (0.0, 339.4)	0.89 1.00 1.00
Neuro, numeric, M (SD)	6.1 (0.7)	6.1 (0.9)	5.8 (0.8)	TO-T+C: 0.9 (0.1,14.0) TO-CO: 2.1 (0.3,17.5) T+C-CO: 2.3 (0.4,14.0)	1.00 1.00 0.79
Sleep, numeric, M (SD)	6.3 (0.7)	6.7 (0.5)	5.3 (1.4)	TO-T+C: 0.9 (0.1,8.2) TO-CO: 5.6 (0.6,48.1) T+C-CO: 6.3 (0.6,61.9)	1.00 0.17 0.17
Back pain, numeric, M (SD)	6.1 (0.6)	6.0 (0.8)	5.6 (1.1)	TO-T+C: 1.2 (0.3,4.6) TO-CO: 2.9 (0.5, 17.9) T+C-CO: 2.3 (0.4,14.0)	1.00 0.49 0.79
Arthritis, numeric, M (SD)	5.8 (1.1)	6.2 (0.7)	6.2 (0.7)	TO-T+C: 0.5 (0.1,3.6) TO-CO: 0.5 (0.1, 3.3) T+C-CO: 1.0 (0.3,4.0)	1.00 1.00 1.00

- 95% of participants reported improvements in pain (n=209); 100% in depression (n=10); 97% in anxiety (n=85) and 83% in sleep (n=30)
- Patients prescribed THC containing products were more likely to report improvements in pain, MHSU and anxiety than those prescribed CBD-dominant products

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Results: Concurrent use of other medications versus prescribed cannabinoid

Table 5: Concurrent medications used versus prescribed cannabinoids

Other medication use	THC only (TO) (n=144)	Mixed (T+C) (n=227)	CBD only (CO) (n=175)[a]	Total (n=546)	Comparisons estimate (95% CI)	Adjusted p value
Opioids, binary, No [ref] vs Yes, n(%)	78 (54%)	142 (63%)	90 (51%)	310 (56%)	TO-T+C: 0.7 (0.4,1.2) TO-CO: 1.1 (0.7,1.9) **T+C-CO: 1.6 (1.0,2.6)**	0.33 1.00 **0.05**
Benzodiazepines, binary, No [ref] vs Yes, n(%)	74 (51%)	111 (49%)	81 (46%)	266 (50%)	TO-T+C: 1.1 (0.7,1.8) TO-CO: 1.2 (0.7,2.1) T+C-CO: 1.1 (0.7,1.8)	1.00 1.00 1.00
Antidepressants, binary, No [ref] vs Yes, n(%)	80 (56%)	114 (50%)	93 (53%)	287 (53%)	TO-T+C: 1.2 (0.7,2.1) TO-CO: 1.1 (0.6, 1.9) T+C-CO: 0.9 (0.5,1.4)	0.95 1.00 1.00
Antipsychotics, binary, No [ref] vs Yes, n(%)	30 (21%)	25 (11%)	16 (9%)	71 (13%)	**TO-T+C: 2.1 (1.0,4.3)** **TO-CO: 2.6 (1.2,5.8)** T+C-CO: 1.2 (0.5, 2.8)	**0.03** **0.01** 1.00
Anticonvulsants, binary, No [ref] vs Yes, n(%)	16 (11%)	17 (7%)	17 (10%)	50 (9%)	TO-T+C: 1.5 (0.6, 3.7) TO-CO: 1.2 (0.5,2.8) T+C-CO: 0.8 (0.3,1.8)	0.71 1.00 1.00
Gabapentinoids, binary, No [ref] vs Yes, n(%)	33 (23%)	50 (22%)	34 (19%)	117 (21%)	TO-T+C: 1.1 (0.6,1.9) TO-CO: 1.2 (0.6,2.4) T+C-CO: 1.2 (0.6,2.1)	1.00 1.00 1.00
Non-opioid analgesics, binary, No [ref] vs Yes, n(%)	72 (50%)	126 (56%)	88 (50%)	285 (52%)	TO-T+C: 0.8 (0.5, 1.3) TO-CO: 1.0 (0.6,1.7) T+C-CO: 1.2 (0.8,2.0)	0.90 1.00 0.90
Other, binary, No [ref] vs Yes, n(%)	11 (8%)	10 (4%)	12 (7%)	33 (6%)	TO-T+C: 1.8 (0.6,5.3) TO-CO: 1.1 (0.4,3.2) T+C-CO: 0.6 (0.2,1.8)	0.58 1.00 0.86

- Across each of the three groups:
  - ≥50% used concurrent opioids
  - ≥45% used concurrent benzodiazepines
  - ≥50% used concurrent antidepressants
  - ≥50% used concurrent non-opioid analgesics
- Participants prescribed THC dominant products were more likely to also be prescribed antipsychotics than participants on CBD-dominant products
- Participants prescribed mixed THC-CBD products were more likely to be prescribed opioids than participants on CBD-dominant products

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Results: Driving patterns versus prescribed cannabinoid

Table 6: Driving patterns of participants prescribed products containing THC vs prescribed prescribed conducts containing CBD only

Driving activities	THC containing products (n=241)	CBD only products (n=123)	Total (n=364)	Coefficient	Comparisons estimate (95% CI)	p value
Driving within 24 hours of consumption, No [ref] vs Yes, n(%)	210 (87%)	113 (92%)	323 (89%)	Odds Ratio	0.6 (0.3,1.3)	0.18
Driving within 12 hours of consumption, No [ref] vs Yes, n(%)	180 (75%)	98 (80%)	278 (76%)	Odds Ratio	0.8 (0.4,1.3)	0.29
Driving within 6 hours of consumption, No [ref] vs Yes, n(%)	117 (49%)	69 (56%)	186 (51%)	Odds Ratio	0.7 (0.5, 1.2)	0.17
Driving within 3 hours of consumption, No [ref] vs Yes, n(%)	85 (35%)	57 (46%)	142 (39%)	Odds Ratio	0.6 (0.4,1.0)	**0.04**
Driving within 1 hours of consumption, No [ref] vs Yes, n(%)	36 (15%)	40 (33%)	76 (21%)	Odds Ratio	0.4 (0.2,0.6)	**<0.001**

- No difference in odds of participants prescribed THC-containing products vs CBD-dominant products driving within 24, 12, or 6 hours of consumption
- Those prescribed THC containing products were significantly less likely to drive within 3 or 1 hour of MC consumption than those prescribed CBD dominant products

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Discussion (1)

- Compared to those prescribed CBD-dominant products, individuals prescribed THC dominant products were:
  - Younger
  - More likely to be male
  - More likely to consume via inhalation
  - Tended to spend more money on prescribed MC per week
  - No difference in frequency of use

Discussion (2)

- Systematic reviews conducted by the TGA have found:
  - THC and CBD are effective in treatment chronic non-cancer related pain and neuropathic pain
    - *But tend to favour THC containing products*
  - CBD used as an adjunct to antiepileptic medications may reduce seizure frequency in people under 25

Discussion (3)

- Recent RCT conducted in Australia found evidence supporting cannabinoids in treating chemotherapy induced N&V
- However, evidence for role of cannabinoid to treat MH and palliative care conditions is limited.

- **Almost half the participants received prescribed MC products for conditions other than pain, epilepsy and chemotherapy induced N&V**

Discussion (4)

- Unlike CBD, THC is well known for its increased risk of impairment, particularly when combined with other sedatives

BUT….

- Patients on prescribed opioids and/or antipsychotics were significantly more likely to be receiving THC containing products than CBD-dominant products

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Discussion (5)

- Unlike THC, the primary concern with CBD is its risk of interaction with CYP450 metabolised drugs (e.g. many benzodiazepines)

BUT….

- Almost 50% of patients on prescribed CBD were receiving concurrent benzodiazepines

Limitations

- Data is self reported and thus there may be inaccuracies around diagnostic conditions, reported effectiveness and reported adverse events
- Was collected by an anonymous survey - sample may not be representative of prescribed MC users generally

Conclusion

- Compared to CBD-dominant consumers, consumers of prescribed THC-dominant medical cannabis products tend to be:
  - Younger
  - More likely to have used illicit cannabis in past
- Products containing THC were favoured over CBD-dominant products for management of
  - Pain
  - Mental Health
  - Sleep
- Crucial to educate medical practioners on evidence based reasons for cannabinoid product prescription + potential drug interactions

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References (1)

1. Banerjee R, Erridge S, Salazar O, Mangal N, Couch D, Pacchetti B, et al. Real World Evidence in Medical Cannabis Research. Ther Innov Regul Sci 2022;56(1):8-14.
2. World Health Organisation. WHO Expert Committee on Drug Dependence: forty-fourth report. 2022. Available from: https://www.who.int/publications/i/item/9789240042834 [Last accessed 1/5/2023].
3. Lintzeris N, Mills L, Abelev SV, Suraev A, Arnold JC, McGregor IS. Medical cannabis
use in Australia: consumer experiences from the online cannabis as medicine survey 2020 (CAMS-20). Harm Reduct J 2022;19(1):88.
4. The Therapeutic Goods Administration. 2022. Available from: https://www.health.gov.au/contacts/therapeutic -goods-administration-tga [Last accessed 31/10/2023]
5. Australian Government. The Senate Community Affairs References
Committee: Current barriers to patient access to
medicinal cannabis in Australia. 2020. Available from: https://apo.org.au/sites/default/files/resource-files/2020-03/apo-nid303158.pdf [Last accessed 1/29/2023].
6. The Therapeutic Goods Administration. Special Access Scheme Category B data. 2021. Available from: https://www.tga.gov.au/products/unapproved-therapeutic-goods/medicinal-cannabis-hub/medicinal-cannabis-access-pathways-and-patient-access-data/medicinal-cannabis-special-access-scheme-category-b-data [Last accessed 1/15/2023].
7. Lintzeris N, Mills L, Suraev A, Bravo M, Arkell T, Arnold JC, et al. Medical cannabis use in the Australian community following introduction of legal access: the 2018–2019 Online Cross-Sectional Cannabis as Medicine Survey (CAMS-18). Harm Reduct J 2020;17(1):37.
8. Lewis M, Flood J. The transition of cannabis into the mainstream of Australian healthcare: framings in professional medical publications. J Cannabis Res 2021;3(1):48.
9. MacPhail SL, Bedoya-Pérez MA, Cohen R, Kotsirilos V, McGregor IS, Cairns EA. Medicinal Cannabis Prescribing in Australia: An Analysis of Trends Over the First Five Years. Front Pharmacol. 2022;13:885655.
10. The Therapeutic Goods Administration. Medical Cannabis Hub. 2022. Available from:https://www.tga.gov.au/products/unapproved-therapeutic-goods/medicinal-cannabis-hub [Last accessed 1/15/2023].
11. National Academies of Sciences E, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on the Health Effects of Marijuana,. The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. Washington (DC): National Academies Press (US). 2017. Available from: https://www.ncbi.nlm.nih.gov/books/NBK425767/#sec_000204 [Last accessed 3/4/2023].
12. Rapin L, Gamaoun R, El Hage C, Arboleda MF, Prosk E. Cannabidiol use and effectiveness: real-world evidence from a Canadian medical cannabis clinic. J Cannabis Res 2021;3(1):19.
13. Russo EB. Current Therapeutic Cannabis Controversies and Clinical Trial Design Issues. Front Pharmacol. 2016;7:309.
14. The Therapeutic Goods Administration. Guidance for the use of medical cannabis in Australia: Patient Information. 2017. Available from: https://www.tga.gov.au/resources/publication/publications/guidance-use-medicinal-cannabis-australia-patient-information [Last accessed 3/2/2023]
15. The Therapeutic Goods Administration. Guidance for the use of medicinal cannabis in the treatment of epilepsy in paediatric and young adult patients in Australia. 2017. Available from: https://www.tga.gov.au/sites/default/files/guidance-use-medicinal-cannabis-treatment-epilepsy-paediatric-and-young-adult-patients-australia.pdf [Last accessed 3/5/2023].
16. Arnold JC, McCartney D, Suraev A, McGregor IS. The safety and efficacy of low oral doses of cannabidiol: An evaluation of the evidence. J Clin Transl Sci 2023; 16:10-30. doi: 10.1111/cts.13425.
17. Millar SA, Stone NL, Bellman ZD, Yates AS, England TJ, O'Sullivan SE. A systematic review of cannabidiol dosing in clinical populations. Br J Clin Pharmacol 2019; 85:1888-1900. Doi: 10.1111/bcp.14038
18. The Therapeutic Goods Administration. Guidance for the use of medicinal cannabis in the treatment of chronic non-cancer pain in Australia. 2017. Available from: https://www.tga.gov.au/resources/publication/publications/guidance-use-medicinal-cannabis-treatment-chronic-non-cancer-pain-australia [Last accessed 3/4/2023]
19. Schubert EA, Johnstone MT, Benson MJ, Alffenaar J, Wheate NJ. Medicinal cannabis for Australian patients with chronic refractory pain including arthritis. British Journal of Pain 2023; 17(2):206-217
20. Schubert EA, Alffenaar JC, Johnstone MT, Barlow JW, Wheate NJ. Medicinal cannabis for patients with chronic non-cancer pain: analysis of safety and concomitant medications
21. Arnold JC, Nation T, McGregor IS. Prescribing medicinal cannabis. Aust Prescr. 2020;43:152-9. doi: 10.18773/austprescr.2020.052.
22. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) – a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform. 2009; 42(2):377-381. doi: 10.1016/j.jbi.2008.08.010
23. Wright P, Walsh Z, Margolese S, Sanchez T, Arlt S, Belle-Isle L et al. Canadian clinical practice guidelines for the use of plant-based cannabis and cannabinoid-based products in the management of chronic non-cancer pain and co-occurring conditions: protocol for a systematic literature review. BMJ Open Sci 2020; 10:e036114. doi: 10.1136/bmjopen-2019-036114.
24. Hurst H, Bolton J. Assessing the clinical significance of change scores recorded on subjective outcome measures J. Manipulative Physiol Ther 2004;27:26-3
25. Arkell TR, McCartney D, McGregor IS. Medical cannabis and driving. Aust J Gen Pract 2021; 50(6). doi: 10.31128/AJGP-02-21-5840
26. Black N, Stockings E, Campbell G, Tran LT, Zagic D, Hall WD et al. Cannabinoids for the treatment of mental disorders and symptoms of mental disorders: a systematic review and meta-analysis. Lancet Psychiatry 2019; 6(12):995-1010. doi: 10.1016/S2215-0366(19)30401-8
27. Stockings E, Zagic D, Campbell G, Weier M, Hall WD, Nielsen S, et al. Evidence for cannabis and cannabinoids for epilepsy: a systematic review of controlled and observational evidence. J Neurol Neurosurg Psychiatry Res 2018; 89(7): 741-753.
28. Stockings E, Campbell G, Hall WD, Nielsen S, Zagic N, Rahman R, et al. Cannabis and cannabinoids for the treatment of people with chronic noncancer pain conditions: a systematic review and meta-analysis of controlled and observational studies. Pain 2018; 159(10):1932-1954.
29. Moore RA, Fisher E, Finn DP, Finnerup NB, Gilron I, Haroutounian S, et al. Cannabinoids, cannabis and cannabis-based medicines for pain management: an overview of systematic reviews. Pain 2021; 162(1):S67-S79. doi:10.1097/j.pain0000000000001941
30. Fisher E, Moore RA, Fogarty AE, Finn DP, Finnerup NB, Gilron I, et al. Cannabinoids, cannabis-based medicines for pain management: a systematic review of randomised controlled trials. Pain 2021; 162(1) S45-S66. doi: 10.1097/j.pain.0000000000001929.
31. Wang L, Hong PJ, May C, Rehman Y, Oparin Y, Hong CJ et al. Medical cannabis or
cannabinoids for chronic non-cancer and cancer related pain: a systematic review and meta-analysis of randomised clinical trials. BMJ 2021; 374(1034) doi: 10.1136/bmj.n1034

References (2)

32. McDonagh MS, Morasco BJ, Wagner J, Ahmed AY, Fu R, Kansagara D, et al. Cannabis-Based Products for Chronic Pain: A Systematic Review. Ann Intern Med 2022; 175(8):1143-1153. doi:10.7326/M21-4250.
33. Perucca Emilio. Cannabinoids in the Treatment of Epilepsy: Hard Evidence at Last. J Epilepsy Res 2017; 7(2): 61-76
34. Sarris J, Sinclair J, Karamacoska D, Davidson M, Firth J. Medicinal cannabis for psychiatric disorders: a clinically-focused systematic review. BMC Psychiatry 2020; 20(1):24 doi:10.1186/s12888-019-2409-8
35. Kancherla N, Jeyanthi KM, Abbas R, Sathi TSCR, Upadhyay A, Garlapati SKP. Cannabis Associated Mental Health Effects: A review. J Pharm Bioallied Sci 2021; 13(2):943-946. doi:10.4103/jpbs.jpbs_388_21
36. Berger M, Amminger GP, McGregor I. Medical cannabis for the treatment of anxiety disorders. Aus J Gen Pract 2022; 51(8): 586-592. doi:1031128/AJGP-04-21-5936.
37. Bilbao A, Spanagel R. Medical cannabinoids: a pharmacological-based systematic review and meta-analysis for all relevant medical indications. BMC Medicine 2022; 20:259. http://doi.org/10.1186/s12916-022-02459-1
38. da Silva EA, Medeiros WMB, Torro N, de Sousa JMM, de Almeida IBCM, da Costa FB, et al. Cannabis and cannabinoid use in austism spectrum disorder: a systematic review. Trends Psychiaty Psychother. 2022; 13:44. doi:10.47626/2237-6089-2020-0149.
39. Kirkpatrick M, O'Callaghan F. Epilepsy and cannabis: so near, yet so far. Dev Med Child Neurol Suppl 2021; 64(2): 162-167. https://doi.org/10.1111/dmcn.15032
40. Zhou D, Dennis E, Snehal I, Swaminathan A. Cannabinoids in the Treatment of Epilepsy: A Review. EMJ 2021; doi: 10.22590/emj/21-000951
41. The Therapeutic Goods Administration. Guidance for the use of medicinal cannabis in the treatment of multiple sclerosis in Australia. 2017. Available from: https://www.tga.gov.au/resources/publication/publications/guidance-use-medicinal-cannabis-treatment-multiple-sclerosis-australia [Last accessed 4/3/2023].
42. RACGP. Medical cannabis use in palliative care. 2021. Available from: https://www1.racgp.org.au/getattachment/1cb6db60-c421-4345-a11c-606d6dc80fcc/Medicinal-cannabis-use-in-palliative-care.aspx [Last accessed 3/5/2023].
43. National Library of Medicine. The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. 2017. Available from: https://www.ncbi.nlm.nih.gov/books/NBK423845/doi: 10.17226/24625 [Last accessed 4/4/2023].
44. MacCallum CA, Lo LA, Pistawka CA, Christiansen A, Boivin M, Snider-Adler M. Clinical Framework for Assessing Cannabis-Related Impairment Risk. Front Psychiatry 2022; 13:883517. PMCID: PMC9272752.
45. Workman CD, Fietsam AC, Sosnoff J, Rudroff T. Increased Likelihood of Falling in Older Cannabis Users vs Non-users. Brain Sci 2021; 11(2):134. PMCID: PMC7909838
46. Beers JL, Fu D, Jackson KD. Cytochrome P450-Catalyzed Metabolism of Cannabidiol to the Active Metabolite 7-Hydroxy-Cannabidiol. Drug Metab Dispos 2021; 49(10):882-891. doi: 10.1124/dmd.120.000350
47. Smith RT, Gruber SA. Contemplating cannabis? The complex relationship between cannabinoids and hepatic metabolism resulting in the potential for drug-drug interactions. Front Psychiatry 2023; 13:2022. doi: htttp://doi.org/10.3389/fp-syt.2022.1055481
48. Otani K. Cytochrome P450 3A4 and Benzodiazepines. Seishin Shinkeigaku Zasshi 2003;105(5):631-42. PMI
49. Alcohol and Drug Foundation. Can I Drive on medicinal cannabis products? 2022. Available from: https://adf.org.au/insights/medicinal-cannabis-driving/ [Last accessed 3/4/2023]

Questions?

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