

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	The prevalence of cannabis use among tobacco smokers: A systematic review protocol
AUTHORS	Skelton, Eliza; Rich, Jane; Handley, Tonelle; Bonevski, Billie

VERSION 1 – REVIEW

REVIEWER	Anees Bahji University of Calgary, Department of Psychiatry
REVIEW RETURNED	22-Apr-2021

GENERAL COMMENTS	Thank you for inviting me to review this systematic review protocol for estimating the prevalence of cannabis use among tobacco smokers. My understanding is that tobacco and cannabis co-use is highly prevalent. However, understanding the nuances and quantifying the degree of association could be helpful. A previous review explored the relationship¹, focusing on the mechanism that could explain the relationship, but the focus of the present study on understanding the prevalence would dovetail nicely. I see that the others cited that previous review, as well. Strengths The use of the PRISMA guidelines to structure the protocol is a strength, as is the organization and the clarity of the language. The references are up to date. The authors pre-registered the review with PROSPERO. The introduction nicely contextualizes the extant literature, justifying the need for the review. The structure of the review team is appropriate for the aim and scope of the review. It also appears to be well-positioned to advance the current state of knowledge. Suggestions The authors discuss generating forest plots and assessing heterogeneity (with I²). However, they should also include τ^2.² Consider including a main “analytic” section to explain what model they would use to estimate prevalence. Consider doing a random-effects meta-analysis and using the Freeman-Tukey double arcsine transformation. This is a preferred approach for stabilizing variance for single-arm prevalence estimates.³ Consider including the name of the statistical software you are aiming to use (e.g., R, Stata, CMA). Consider including the name of the statistical test for assessing funnel plot symmetry. Most likely, they will use Egger's test (linear regression for funnel plot symmetry).⁴ Consider methods for addressing publication bias (e.g., if detected, they could estimate the approximate number of missing studies
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	using the trim-and-fill method to give a sense of the degree of publication bias).⁵ Consider conducting an individual participant-level meta-analysis—if data permits. References 1. Rabin RA, George TP. A review of co-morbid tobacco and cannabis use disorders: possible mechanisms to explain high rates of co-use. <i>Am J Addict.</i> 2015;24(2):105-116. doi:10.1111/ajad.12186 2. Higgins JPT, Thompson SG. Quantifying heterogeneity in a meta-analysis. <i>Stat Med.</i> 2002;21(11):1539-1558. doi:10.1002/sim.1186 3. Miller JJ. The Inverse of the Freeman – Tukey Double Arcsine Transformation. <i>Am Stat.</i> 1978;32(4):138-138. doi:10.1080/00031305.1978.10479283 4. Egger M, Davey Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. <i>BMJ.</i> 1997;315(7109):629-634. doi:10.1136/bmj.315.7109.629 5. Duval S, Tweedie R. Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. <i>Biometrics.</i> 2000;56(2):455-463.
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REVIEWER	Hannah Walsh King's College London, Florence Nightingale Faculty of Nursing, Midwifery and Palliative Care
REVIEW RETURNED	23-May-2021

GENERAL COMMENTS	This systematic review protocol which aims to identify the prevalence of cannabis use amongst tobacco smokers is timely and highly relevant for smoking cessation research; but also for wider substance misuse research, since it highlights the challenges of polysubstance use in treatment settings. It is clear, well structured and I have included some points for consideration by the authors, but I am happy to recommend this is published without major amendments. Overall comments: The aim of this study is to identify cannabis use amongst tobacco smokers – it would be useful to define what level or frequency of tobacco would be required to constitute a tobacco smoker. For example, smoking cessation intervention studies would recruit people who used tobacco to the extent they wished to stop, whereas population surveys may report on lifetime use of tobacco, but these participants may not consider themselves to be 'tobacco smokers'. Additionally, for the purposes of improving the efficacy of smoking cessation interventions, prevalence of cannabis use amongst the former is far more relevant than the latter; so the authors may wish to find a way of enhancing the definition of 'tobacco smoker' throughout the review. Similarly, the definition of co-use is broad within the current research literature. The authors may wish to find a way to use the tiered system proposed by Hindocha and McClure (<i>Addiction</i>, 2020) to classify outcomes of this review. There are a few further co-use reviews not cited in the introduction (Lemyre et al, 2019; McClure et al 2020, Mejia 2020). Whilst a comprehensive review of reviews is not necessarily required, the introductory section could be enhanced with reference to further reviews, including the reviews of interventions for co-use, since interventions are included within the search terms of this protocol (Montgomery et al 2017, Walsh et al 2020, Nguyen et al 2020). Line 73 – a really important point, please provide citations if
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	available, or expanding on this if an exploratory query L159 it would be useful to define the amount/frequency of tobacco use found which would constitute a tobacco user, see earlier point L146 It would be useful to see justification for inclusion of intervention studies within the study design as a means of measuring prevalence. If included, then details of which intervention studies would be included and which excluded. For example, presumably only interventions targeting tobacco users would be included, since those targeting co-users by their nature would not give an accurate prevalence of cannabis use. Perhaps the prevalence estimate from intervention studies could be presented separately to the main prevalence. I note that intervention studies are not listed in the table of search terms. L177 Positive to see that the Cochrane TAG has been consulted
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VERSION 1 – AUTHOR RESPONSE

REVIEWER

1.The authors discuss generating forest plots and assessing heterogeneity (with I²). However, they should also include τ^2 .

For the purposes of our study, and as suggested by Hak et al., we believe that I² will be sufficient to assess heterogeneity.

Hak, T., Van Rhee, H. J., & Suurmond, R. (2016). How to interpret results of meta-analysis. (Version 1.3) Rotterdam, The Netherlands: Erasmus Rotterdam Institute of Management.
www.irim.eur.nl/researchsupport/meta-essentials/downloads

2.Consider including a main “analytic” section to explain what model they would use to estimate prevalence. Consider doing a random-effects meta-analysis and using the Freeman-Tukey double arcsine transformation. This is a preferred approach for stabilizing variance for single-arm prevalence estimates.

If the heterogeneity among the studies is large, a random-effects model will be used to calculate the pooled OR. Otherwise, a fixed-effects model will be applied. We will use a Generalised Linear Model approach, due to methodological concerns with the Freeman–Tukey double-arcsine transformation method, e.g.:

Schwarzer G et al (2019). Seriously misleading results using inverse of Freeman-Tukey double arcsine transformation in meta-analysis of single proportions. Res Synth Methods, 10, 476-483

Lin L, Xu C (2020). Arcsine-based transformations for meta-analysis of proportions: Pros, cons, and alternatives. Health Science Reports, e178.

3.Consider including the name of the statistical software you are aiming to use (e.g., R, Stata, CMA).

Stata Statistical Software, referenced, has been added.

4. Consider including the name of the statistical test for assessing funnel plot symmetry. Most likely, they will use Egger's test (linear regression for funnel plot symmetry).

This recommendation has been added to the methods section.

5. Consider methods for addressing publication bias (e.g., if detected, they could estimate the approximate number of missing studies using the trim-and-fill method to give a sense of the degree of publication bias).

This recommendation has been added.

6. Consider conducting an individual participant-level meta-analysis—if data permits.

This will be considered if data permits.

References –

Thank you for the suggestions the highlighted plus others in the intro have been added.

1. Rabin RA, George TP. A review of co-morbid tobacco and cannabis use disorders: possible mechanisms to explain high rates of co-use. *Am J Addict.* 2015;24(2):105-116. doi:10.1111/ajad.12186
2. Higgins JPT, Thompson SG. Quantifying heterogeneity in a meta-analysis. *Stat Med.* 2002;21(11):1539-1558. doi:10.1002/sim.1186
3. Miller JJ. The Inverse of the Freeman – Tukey Double Arcsine Transformation. *Am Stat.* 1978;32(4):138-138. doi:10.1080/00031305.1978.10479283
4. Egger M, Davey Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *BMJ.* 1997;315(7109):629-634. doi:10.1136/bmj.315.7109.629
5. Duval S, Tweedie R. Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics.* 2000;56(2):455-463.

REVIEWER #2

1. The aim of this study is to identify cannabis use amongst tobacco smokers – it would be useful to define what level or frequency of tobacco would be required to constitute a tobacco smoker. For example, smoking cessation intervention studies would recruit people who used tobacco to the extent they wished to stop, whereas population surveys may report on lifetime use of tobacco, but these participants may not consider themselves to be 'tobacco smokers'. Additionally, for the purposes of improving the efficacy of smoking cessation interventions, prevalence of cannabis use amongst the former is far more relevant than the latter; so the authors may wish to find a way of enhancing the definition of 'tobacco smoker' throughout the review.

Thank you for this suggestion and flexibility in our approach re the definition will be considered focusing on population studies of prevalence of use and prevalence studies of cannabis use within samples of smokers.

2. Similarly, the definition of co-use is broad within the current research literature. The authors may

wish to find a way to use the tiered system proposed by Hindocha and McClure (Addiction, 2020) to classify outcomes of this review.

This recommendation has been included.

3. There are a few further co-use reviews not cited in the introduction (Lemyre et al, 2019; McClure et al 2020, Mejia 2020). Whilst a comprehensive review of reviews is not necessarily required, the introductory section could be enhanced with reference to further reviews, including the reviews of interventions for co-use, since interventions are included within the search terms of this protocol (Montgomery et al 2017, Walsh et al 2020, Nguyen et al 2020).

Thank you, references to further reviews has been added to the introduction and highlighted in the manuscript.

4. Line 73 – a really important point, please provide citations if available, or expanding on this if an exploratory query

Thank you two additions references have been added supporting the need to explore soci-demographic and environmental factors of co-use.

5. L159 it would be useful to define the amount/frequency of tobacco use found which would constitute a tobacco user, see earlier point

As recommended and now revised, we will not include RCT/intervention definitions which can be varying. Instead, we will be focusing on population studies of prevalence of use and prevalence studies of cannabis use within samples of smokers. As explained in the 'Outcomes' we will include studies that report primary data on the prevalence of tobacco and cannabis use (such as total number of participants and percentages or proportions). Given that there is no standard assessment tool of tobacco and cannabis co-use we will include all measures as documented in the literature. For example, separate items that measure cannabis and tobacco use: "Do you currently smoke any tobacco products?" with response options i) yes, at least once a week; ii) yes, less often than once week; iii) no, not at all"; "During the past 30 days, on how many days did you use cannabis?"; "How many times is cannabis used per day on using days". Co-use has been defined in several recent US studies as the use of both substances within the past 30 days.

6. L146 It would be useful to see justification for inclusion of intervention studies within the study design as a means of measuring prevalence. If included, then details of which intervention studies would be included and which excluded. For example, presumably only interventions targeting tobacco users would be included, since those targeting co-users by their nature would not give an accurate prevalence of cannabis use. Perhaps the prevalence estimate from intervention studies could be presented separately to the main prevalence. I note that intervention studies are not listed in the table of search terms.

Many thanks for this observation, and the author team agree that the samples taken from prevalence studies and intervention studies (which usually impose strict exclusion criteria) would be too distinct and as a result we have excluded intervention studies from our Inclusion criteria, Data extraction and Assessment of Heterogeneity.

VERSION 2 – REVIEW

REVIEWER	Hannah Walsh King's College London, Florence Nightingale Faculty of Nursing, Midwifery and Palliative Care
REVIEW RETURNED	24-Mar-2022

GENERAL COMMENTS	The authors have comprehensively addressed all points raised by both reviewers, and made amendments accordingly; the aims, objectives and methods are clearly presented and the rationale succinctly described.
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