**PICO Search Assignment Worksheet** **Name: Jay Kolasinac**

A 25yo, caucasian male, unemployed, domiciled, w/ no significant PMH or PPH, was BIBEMS activated by mother, for bizarre behavior. The mother stated the son was talking to himself and stated he told her that he was hearing voices. He was acting very bizarre. The patient does not take any medication nor does he drink alcohol. The patient admits to smoking marijuana on a regular basis ever since graduating high school about 7 years ago. He denies suicidal ideation/homicidal ideation.

**Search Question:** In cannabis users, does smoking cannabis predispose a patient to early onset psychosis?

**Question Type:** What kind of question is this? (boxes now checkable in Word)

☐Prevalence ☐Screening ☐Diagnosis
☒Prognosis ☐Treatment ☒Harms

Assuming that the highest level of evidence to answer your question will be meta-analysis or systematic review, what other types of study might you include if these are not available (or if there is a much more current study of another type)?
**Please explain your choices.**

Along with meta-analyses and systematic reviews, I believe observational studies would also be types of studies I might want to include. The subject of interests, cannabis users, would be observed for specific risk factors [cannabis use] or for specific outcomes [early onset psychosis].

**PICO search terms:**

| **P** | **I** | **C** | **O** |
|---|---|---|---|
| Cannabis users | Smoking cannabis | None | Early onset psychosis |
| Marijuana users | Smoking marijuana | | First-time episode of psychosis |
| | | | Psychiatric disorders |
| | | | |

**Search tools and strategy used:**

| Database | Terms | Filter | # of Articles |
|---|---|---|---|
| PubMed | ((cannabis users) OR marijuana users) AND early onset psychosis | Medline, last 5 years | 926 |
| ScienceDirect | ((cannabis users) OR marijuana users) AND early onset psychosis | Research articles, last 5 years, Psychology | 172 |

I narrowed my search articles by including filters [Medline, last 5 years, research articles, etc]. I wanted high level of evidence articles so I aimed meta-analyses or systematic reviews where I was able to find a few that focused on my PICO question and applied to all my filters.

**Results found:**

**Article 1**

**Citation**

Myles, H., Myles, N., & Large, M. (2015). *Cannabis use in first episode psychosis: Meta-analysis of prevalence, and the time course of initiation and continued use. Australian & New Zealand Journal of Psychiatry, 50(3), 208–219.* doi:10.1177/0004867415599846

sci-hub.se/10.1177/0004867415599846

**Article Type**

Meta-analysis

**Abstract**

**Objectives**: Cannabis use is prevalent among people with first episode psychosis and the epidemiology of its use in early psychosis is unclear. We performed a meta-analysis of observational studies to determine; (1) the interval between age at initiation of cannabis use and age at onset of first episode psychosis, (2) the prevalence of cannabis use at time of first episode psychosis, and (3) the odds of continuing cannabis following treatment for first episode psychosis.
**Data sources**: Search of electronic databases MEDLINE, EMBASE, PsycINFO, Web of Science and CINAHL for Englishlanguage papers using search terms (psychosis OR schizophrenia) AND (cannabis OR marijuana) IN (title OR keyword OR abstract), current to October 2014.
**Study selection**: Studies were included if they reported on prevalence of current cannabis use in first episode psychosis cohorts. A total of 37 samples were included for meta-analysis.
**Data extraction:** Rates of cannabis use in each sample were extracted to determine prevalence estimates. The age at initiation of regular cannabis and age at onset of psychosis were used to determine the length of cannabis use preceding psychosis. Prevalence estimates at first episode psychosis and various time points of follow-up following first episode psychosis were

analysed to determine odds ratio of continuing cannabis use. Data synthesis was performed using random-effects meta-analyses.
**Results:** The pooled estimate for the interval between initiation of regular cannabis use and age at onset of psychosis was 6.3years (10 samples, standardised mean difference=1.56, 95% confidence interval=[1.40, 1.72]). The estimated prevalence of cannabis use at first episode psychosis was 33.7% (35 samples, 95% confidence interval=[31%, 39%]). Odds of continued cannabis use between 6months and 10 years following first episode psychosis was 0.56 (19 samples, 95% confidence interval=[0.40, 0.79]).

**Key Points**

- Meta-analysis of 37 samples was used
- Cannabis use predates and is prevalent in early psychosis
- Significant rates of cessation of marijuana at follow up
- Current climate of liberalization of cannabis warrants ongoing investigation on prevalence of future early onset psychosis with prior cannabis usage

**Reason for choosing:**

- This article was a meta-analysis, which utilized 37 different samples and was published within the last 5. The article focused directly on my PICO. The article concludes there is prevalent usage of marijuana in early onset psychosis but also warrants further research considering the state with which the world is headed towards in legalizing marijuana everywhere.

**Article 2**

**Citation**

Bagot, K. S., Milin, R., & Kaminer, Y. (2015). *Adolescent Initiation of Cannabis Use and Early-Onset Psychosis. Substance Abuse, 36(4), 524–533.* doi:10.1080/08897077.2014.995332

**sci-hub.se/10.1080/08897077.2014.995332**

**Article Type**

Systematic review

**Abstract**

**Background**: It is important to evaluate the impact of cannabis use on onset and course of psychotic illness, as the increasing number of novice cannabis users may translate into a greater public health burden. This study aims to examine the relationship between adolescent onset of regular marijuana use and age of onset of prodromal symptoms, or first episode psychosis, and the manifestation of psychotic symptoms in those adolescents who use cannabis regularly.
**Methods**: A review was conducted of the current literature for youth who initiated cannabis use prior to the age of 18 and experienced psychotic symptoms at, or prior to, the age of 25. Seventeen studies met eligibility criteria and were included in this review.

**Results**: The current weight of evidence supports the hypothesis that early initiation of cannabis use increases the risk of early onset psychotic disorder, especially for those with a preexisting vulnerability and who have greater severity of use. There is also a dose-response association between cannabis use and symptoms, such that those who use more tend to experience greater number and severity of prodromal and diagnostic psychotic symptoms. Those with early-onset psychotic disorder and comorbid cannabis use show a poorer course of illness in regards to psychotic symptoms, treatment, and functional outcomes. However, those with early initiation of cannabis use appear to show a higher level of social functioning than non-cannabis users.
**Conclusions**: Adolescent initiation of cannabis use is associated, in a dose-dependent fashion, with emergence and severity of psychotic symptoms and functional impairment such that those who initiate use earlier and use at higher frequencies demonstrate poorer illness and treatment outcomes. These associations appear more robust for adolescents at high risk for developing a psychotic disorder.

**Key Points**

- Usage of cannabis is associated with emergence and severity of psychotic symptoms and functional impairments.
- More robust association noted with cannabis usage and those who are deemed high risk for psychotic disorders
- The data presented here appears to validate the independent association between early cannabis usage and early-onset first-episode psychosis

**Reason for choosing:**

This was a systematic review that included 17 articles in its review. The review was conducted within the last 5 years and answered my PICO question directly. It focused directly on cannabis usage and early onset psychosis.

**Article 3**

**Citation**

van der Steur SJ, Batalla A, Bossong MG. Factors Moderating the Association Between Cannabis Use and Psychosis Risk: A Systematic Review. *Brain Sci.* 2020;10(2):97. Published 2020 Feb 12. doi:10.3390/brainsci10020097

**sci-hub.se/10.3390/brainsci10020097**

**Article Type**

Systematic review

**Abstract**

Increasing evidence indicates a relationship between cannabis use and psychosis risk. Specific factors, such as determinants of cannabis use or the genetic profile of cannabis users, appear to moderate this association. The present systematic review presents a detailed and up-to- date literature overview on factors that influence the relationship between cannabis use and psychosis risk. A systematic search was performed according to the PRISMA guidelines in

MEDLINE and Embase, and 56 studies were included. The results show that, in particular, frequent cannabis use, especially daily use, and the consumption of high-potency cannabis are associated with a higher risk of developing psychosis. Moreover, several genotypes moderate the impact of cannabis use on psychosis risk, particularly those involved in the dopamine function, such as AKT1. Finally, cannabis use is associated with an earlier psychosis onset and increased risk of transition in individuals at a clinical high risk of psychosis. These findings indicate that changing cannabis use behavior could be a harm reduction strategy employed to lower the risk of developing psychosis. Future research should aim to further develop specific biomarkers and genetic profiles for psychosis, thereby contributing to the identification of individuals at the highest risk of developing a psychotic disorder.

**Key Points**

- Use of cannabis increases the risk of psychosis
- Cannabis use lowers the age of onset of psychosis by 3 years and increases the risk of transition in subjects who are already high risk for psychotic disorders

**Reason for choosing:**

This article was a systematic review that was recently published last year. It is very new evidence and the evidence is that of high value. 56 studies were included in the review. The article directly answered my PICO question.

**What is the clinical "bottom line" derived from these articles in answer to your question?**

The clinical bottom line from all three of the selected articles is that the usage cannabis ultimately predisposes a patient to an earlier age of onset for psychosis. Myles et al., concluded that cannabis use predates and is prevalent in early psychosis. Bagot et al., concluded that cannabis usage was associated with increased emergence and severity in psychotic episodes. The association was more profound in individuals who were already seen as high risk for psychotic disorders. van der Steur et al., the most recent of the 3 studies, concluded that cannabis can lower the age of onset of psychosis by as much as 3 years. Based on the evidence, we could conclude there is an association between cannabis and early-onset psychosis. With the motion to legalize cannabis across the US, we could see an increase in prevalence of early onset psychosis. Future/current studies need to be conducted to further explore this hypothesis. Now that efforts are made to further legalize cannabis, what can be done to inform the public of the dangers of marijuana, especially to those who are already at high risk for psychosis?