STASH, Vol. 6(1) – Skunked: Can high-potency cannabis use influence psychosis onset?

January 20, 2010

Research indicates that cannabis use is associated with increased risk of psychosis and that cannabis potency and patterns of use can influence this risk (Henquet, Murray, Linszen, & van Os, 2005; Moore et al., 2007; Murray, Morrison, Henquet, & Di Forti, 2007). During recent decades, the potency of cannabis being sold illicitly in the US has increased dramatically. The average percentage of delta-9 tetrahydrocannabinol (Δ-9 THC) identified within samples seized by law enforcement increased from approximately 2% in 1980 to 8.5% in 2008 (ElSohly, 2009). This week's STASH reviews a study by Di Forti et al. in which they investigated the correlation between the use of cannabis with higher levels of Δ -9 THC, such as skunk cannabis, and onset of psychosis (Di Forti et al., 2009).

Methods

- In this case-control study, researchers enrolled 280 cases (i.e., patients) aged 18-65 from 3 in-patient mental health units in London, UK with first hospital admission for psychosis.
- Researchers also enrolled 174 control cases from the general population within the catchments areas of the case-related hospitals via advertisements in newspapers, on the Internet, and recruitment at businesses.
    - Potential controls completed the Psychosis Screening Questionnaire and were not enrolled in the study if they screened positive for psychosis or had a history of psychosis.
- Study participants provided information about sociodemographic variables and drug use history.
    - Participants reporting cannabis use completed the Cannabis Experience Questionnaire.

- Researchers used logistic regression analyses to examine the relationships between case-control status and cannabis use characteristics.

Results

- 57% (n = 159) of cases and 63% (n = 109) of controls reported having used cannabis at least once (OR = 0.8, 95% CI 0.6-1.5).
- Of those study participants reporting cannabis use
    - 77% of cases and 33% of controls reported using cannabis daily (OR adjusted to account for potential confounders (i.e., age, gender, ethnicity, education, employment status) = 6.4, 95% CI 3.2-28.6). See Figure 1.
    - 78% of cases reported preferential use of high-potency (Δ-9 THC levels 12-18%) "skunk" cannabis compared to 37% of controls (Adjusted OR = 6.8, 95% CI 2.6-25.4)
    - When asked about duration of use, 59% of cases and 38% of controls reported using cannabis for more than 5 years (Adjusted OR = 2.1, 95% CI 0.9-8.4).

Figure 1: Patterns of cannabis use among cases and controls (adapted from Di Forti et al., 2009)

*** Statistically significant difference, P<0.05**

Limitations

- Non-random sampling strategies used to recruit controls and a lack of matching between cases and controls might have biased the findings of this study.
- Study relies on self-report of drug use history, including the type of cannabis used.
- Given the retrospective nature of the study (e.g., asking questions about

past cannabis use) it is impossible to establish a temporal, causal relationship between high potency cannabis use and development of psychosis. For example, people who have experienced psychotic episodes might prefer high potency cannabis – perhaps as a self-handicapping strategy.

- The authors collected data about patients' use of other illicit drugs; however, they do not report it in the study. It is possible that the use of other drugs might increase psychosis risk. But, this cannot be determined from the data presented.

Conclusion

Patients with a first psychotic episode onset were significantly more likely than healthy controls to use high-potency cannabis; they also were more likely to use cannabis more frequently than the controls. This finding supports the conclusion of the authors: high concentrations of Δ9-THC is an active contributor to psychosis among cannabis users. Additional research is needed to address the limitations of this study, particularly to establish a temporal relationship between high potency cannabis exposure and onset of psychosis. As high-potency cannabis becomes more widely available to consumers, Di Forti et al. highlight the risks associated with high-potency cannabis for the public health.

-Erica Marshall

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