**PBIO 504 Literature Review Assignment**

**Name: Michael Chambers**

Association of Interest: Cannabis use during pregnancy and low birth weight

Identify an association of interest and select 3 - 5 most recent (published in the last 5-10 years) articles to review. Search PubMed (or any other peer-reviewed journal database) for these articles and download to read full text. Complete the literature review table below, list all references after the table, and write a one-page summary of the table.

Write a one-page report that summarizes the content of the table. This may include discussing about the use of different study designs, different study populations, different definitions for the outcome and for the main exposure, different statistical methods used for the analysis, and controlling for different sets of confounders.

Conclude with a short paragraph describing what you learned from this assignment.

In the “Outcome Measure” and “Main Exposure” (or main risk factor) column, include information on how the variable was classified (categorical vs. continuous), if it is self-reported, based on diagnosis, pathological results, etc., and cutoff points used (if applicable).

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| **Authors/Year** | **Type of Study / Sample Size** | **Population Characteristics** | **Outcome Measure** | **Main Exposure &**  **Other Variables** | **Statistical Method** | **Result** |
| **van Gelder et al. 2010** | Population study  n=5871 | Mothers living within the United States who delivered live-born infants without birth defects between 1997-2004 | Self-reported cannabis use during pregnancy, infant birth weight | Use of cannabis during pregnancy, other variables include combinations of illicit drug use (cocaine, hallucinogens, opioids), cannabis dosage not accounted for | Multivariable linear regression with inclusion of potential confounding variables as linear covariates (ethnicity, education, cigarette smoking, binge drinking) | - Prevalence of cannabis use was 3.2% (n=189)  - No association between maternal cannabis use and infant LBW (OR .7, 95% CI .3-1.6)  - Reported cannabis use does not appear to be associated with low birth weight or preterm birth |
| **Desai et al. 2014** | Retrospective cohort study  n=396 | Mothers in a university-based setting from 2009-2010 | self-reported cannabis use or urine toxicology, infant birth weight | Use of cannabis during pregnancy, cannabis dosage not accounted for | ANOVA and logistic regression, this study did not address if known confounding variables were taken into account in the statistical analysis | - 20% (n=79) of mothers tested positive for cannabis  - Birth outcomes were available for 43% of the patients  - Cannabis use during pregnancy was not related to infant birth weight (mean difference of 63 g, P=.555) |
| **Leemaqz et al. 2016** | Population study  n=5588 | Nulliparous women from the international Sceening for Pregnancy Endpoints study from 2004-2011 | Self-reported cannabis use, infant birth weight (lbw= birth weight < 10th of custom percentile) | Use of cannabis during pregnancy (categorized by gestational week), other complicating variables include use of other illicit drugs | Mixed effects logistic regression, adjusting for maternal age, BMI and cigarette smoking status | - 5% of women reported the use of cannabis before or during pregnancy  - Univariable analysis of cannabis use at 20 wks of gestation was found to be associated with lbw (not associated when cigarette smoking taken into account)  - Mothers who use cannabis at 20 weeks gestation are not at greater risk of having a low birth weight child (OR 1.84, 95% CI .9-3.76) |
| **Crume et al. 2018** | Cross-sectional study  n=3207 | Respondents from the 2014-2015 Colorado Pregnancy Risk Assessment Monitoring System | Self-reported prenatal cannabis use, infant birth weight | Prenatal cannabis use, other variables included were diabetes before pregnancy, BMI, and gestational weight gain | Multivariable logistic regression models that accounted for maternal age, ethnicity, education level, and tobacco use; Wald Chi-square to determine significance | - Self-reported cannabis use at any time during pregnancy was 5.7%  - Prenatal cannabis use was associated with a 50% increased likelihood of low birth weight ( OR 1.5, 95% CI 1.1-2.1) |

List of References:

1. Desai, A., Mark, K., & Terplan, M. (2014). Marijuana use and pregnancy: prevalence, associated behaviors, and birth outcomes. *Obstetrics & Gynecology*, *123*, 46S.
2. Crume, T. L., Juhl, A. L., Brooks-Russell, A., Hall, K. E., Wymore, E., & Borgelt, L. M. (2018). Cannabis use during the perinatal period in a state with legalized recreational and medical marijuana: the association between maternal characteristics, breastfeeding patterns, and neonatal outcomes. *The Journal of pediatrics*, *197*, 90-96.
3. Leemaqz, S. Y., Dekker, G. A., McCowan, L. M., Kenny, L. C., Myers, J. E., Simpson, N. A., ... & SCOPE Consortium. (2016). Maternal marijuana use has independent effects on risk for spontaneous preterm birth but not other common late pregnancy complications. *Reproductive Toxicology*, *62*, 77-86.
4. van Gelder, M. M., Reefhuis, J., Caton, A. R., Werler, M. M., Druschel, C. M., & Roeleveld, N. (2010). Characteristics of pregnant illicit drug users and associations between cannabis use and perinatal outcome in a population-based study. *Drug and alcohol dependence*, *109*(1-3), 243-247.

Report:

The aim of this literature review was to find studies that looked for an association between cannabis use during pregnancy and the outcome of low birth weight. To start, many of these studies cited previous works that identified an increasing use of cannabis within the United States. This finding raises the question if cannabis use during pregnancy is associated with low birth weights. Most of these studies looked into other variables/exposures (education level, use of other illicit drugs, cigarette use) and measured additional outcomes (premature birth, gestational age, and neonatal ICU admission), but I focused solely on cannabis use and low birth weight. Aside from a single recent study coming from Colorado, none of the studies found any association between cannabis use during pregnancy and the outcome of low birth weight so long as cigarette use was taken into consideration. I was surprised that only one of the studies incorporated a urine toxicology exam to monitor the use of cannabis, though I understand this would demand additional resources for a given study. I found it especially interesting that the only study I found that identified an association between cannabis use during pregnancy and low birth weight came from Colorado, a state that legalized cannabis for recreational use in 2012 (one of the first states to do so). Given that there are conflicting results between the studies summarized above I am walking away from this with the impression that cannabis use during pregnancy is not associate with low birth weight.