**Discussion Section Week 9**

BIOST 311

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For discussion section this week, we will read and analyze excerpts from a peer-reviewed scientific paper. This activity provides an opportunity to synthesize what you’ve learned in BIOST 311 so far and to gain experience dealing with real-world literature.

The document “Jacobs2020.pdf” contains an edited version of the 2020 paper “Observational Study of the Downstream Consequences of Inappropriate MRI of the Lumbar Spine” by Jacobs et al., which appeared in the *Journal of General Internal Medicine*. Follow the discussion section activity instructions below. You should complete this activity with a partner. You will turn in your answers to get credit for this week.

1. Read the Introduction and Methods sections of the paper and answer the following questions.
   1. What is the population of interest in this study?
   2. What is the population from which the study sample was gathered?
   3. List the exposure(s) and outcome(s) investigated in this study.
   4. Why do you believe the authors chose a retrospective cohort design for this study?
   5. Why did the authors exclude primary care visits where there was a “red flag” condition?
   6. How did the authors choose a time window in which to measure outcomes? What concerns might they have had with choosing a window beginning at the index visit?
   7. Consider the following list of variables, which is a subset of what was included in the authors’ regression analyses. Draw a causal diagram for the relationship between early MRI and surgery (you may use the Roman numerals rather than writing out the full variable name). On the list below, label each variable as either predictor of interest, outcome, potential confounder, potential precision variable, or none of the above.
      1. Early MRI
      2. Surgery
      3. Age
      4. Sex
      5. Whether the patient was assigned to a primary care provider
      6. Type of clinic visited at index visit (satellite or hospital)
      7. Pain score at index visit
      8. History of opioid use in the prior year
      9. Painful condition diagnosis in previous year
   8. Consider the following list of variables, which is a subset of what was included in the authors’ regression analyses. Draw a causal diagram for the relationship between early MRI and opioid prescription (you may use the Roman numerals rather than writing out the full variable name). On the list below, label each variable as either predictor of interest, outcome, potential confounder, potential precision variable, or none of the above.
      1. Early MRI
      2. Surgery
      3. Age
      4. Sex
      5. Whether the patient was assigned to a primary care provider
      6. Type of clinic visited at index visit (satellite or hospital)
      7. Pain score at index visit
      8. History of opioid use in the prior year
      9. Painful condition diagnosis in previous year
2. Read the Results and Discussion sections of the paper and answer the following questions.
   1. The authors excluded over 20,000 patients from the dataset because of missing pain and clinic information. Do you have any concerns about this? Do you think it’s safe to assume that these excluded patients are similar to those who were included in the study?
   2. Based on how the age variable is presented in Table 1, in what form do you think age was included as a covariate in the multiple Poisson regression (categorical or quantitative)?
   3. Looking at Table 2 and Table 3, would you say that adjusting for additional covariates had a substantial impact on the overall results of the study, compared to the unadjusted analysis?
   4. In the first paragraph of the Discussion, the authors compare their findings regarding surgery to prior studies and say that their estimated relative risk agrees with previous results. Had the authors instead looked at (unadjusted) risk difference, how would their results have compared to prior studies?
   5. Are there additional adjustment variables you think would be important to include in future studies of this sort? Why do you believe those additional variables are important?