Factor Analysis in the Categorization of Endometriosis Lesion Location from the SPiTE study

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Background

Endometriosis is a severe disease which impacts an estimated 10% of those assigned female at birth. Receiving a diagnosis often comes at a 7-10 year delay as patients struggle through various barriers including sexism, cost, and lack of clinician understanding of the disease resulting in unnecessary pain, infertility, and mental health impacts. Research on endometriosis has lacked a clear and useful categorization system as well as sufficient understanding of where endometriosis is found in the body.

Aim

- Examine endometriosis lesion locations using exploratory factor analysis to detect patterns in selected demographics.

Methods

- Using data from an online survey of endometriosis patients, self reported endometriosis lesion locations were extracted
- An exploratory factor analysis was completed using a varimax rotation
- Factors were divided into the top 10% factor score and bottom 10% factor score and selected demographics where explored using a chi-squared and Fisher's exact test, as appropriate

Results

- Factor 1 saw significant associations between race, income levels, education, alcohol use, living in a rural area, adhesions, diagnostic delay, and number of comorbidities when comparing the top 25% to the bottom 25% scores.
    - More likely to identify as white, report income of 60k or more, employed full time, have a bachelor's degree or higher, a light drinker, have lived in a rural area as an adult, have adhesions, report a diagnostic delay of 11 or more years, and report 4 or more comorbidities
- Factor 2 saw significant associations between self-reported race, employment status, educational attainment, number of pregnancies, diagnostic delay, BMI and year of diagnosis when comparing the top 25% to the bottom 25% scores.
    - More likely to be white, have a bachelor's degree or higher, have never been pregnant, diagnosed with 15 or more years delay, to have a normal BMI, and be diagnosed in 2005 or later, and less likely to be employed part time
- Factor 3 saw significant associations between employment levels, education attainment, smoking status, number of pregnancies, adhesions, diagnostic delay, BMI, and year of diagnosis when comparing the top 25% to the bottom 25% scores.
    - More likely to be employed part time or be disabled, report some college, to have started smoking as an adult, been pregnant 2 or more times, to have adhesions or be unsure if they had adhesions, been diagnosed with between 6-10 years delay or be diagnosed incidentally, more likely to be overweight or obese, and been diagnosed before 2005

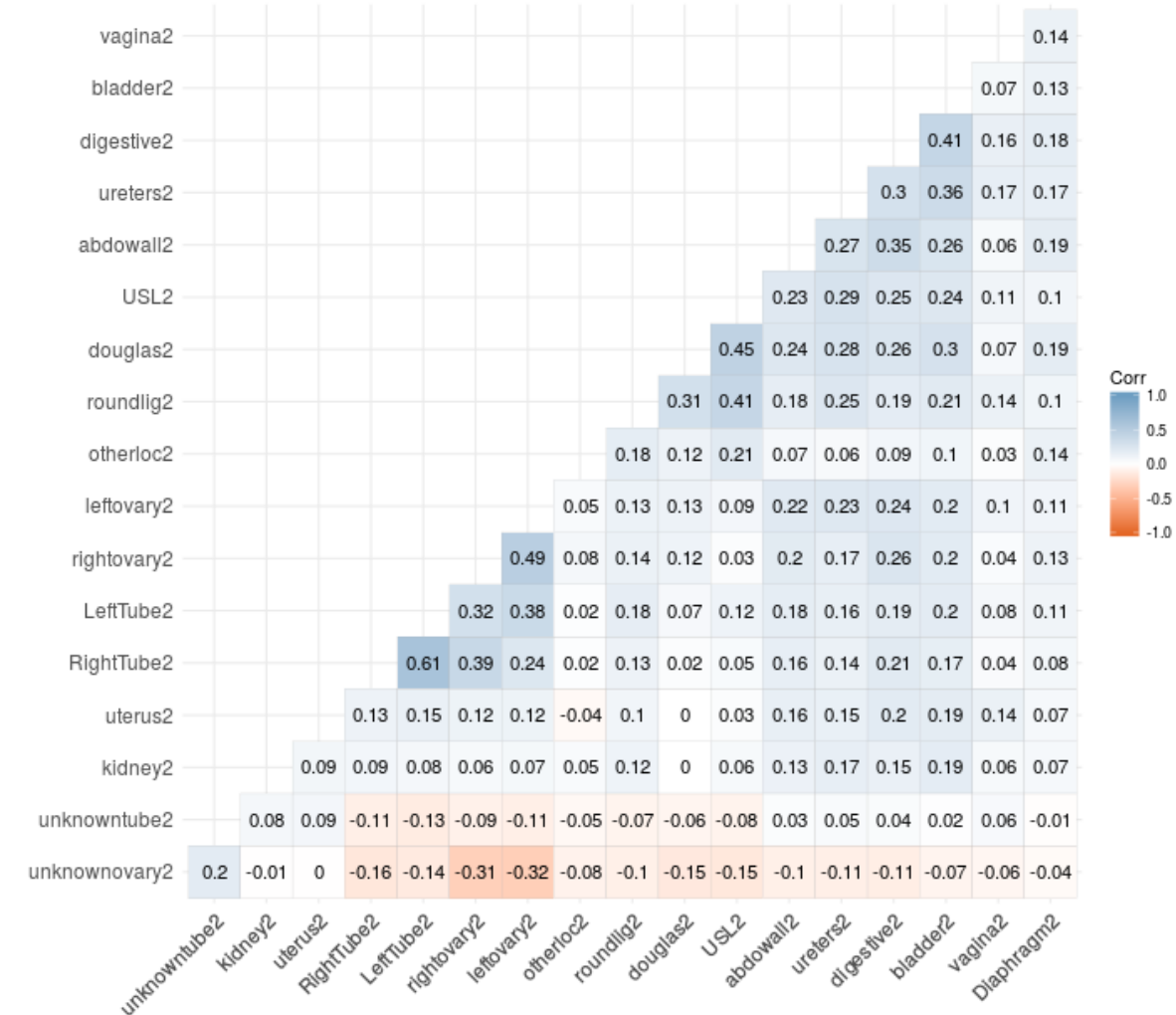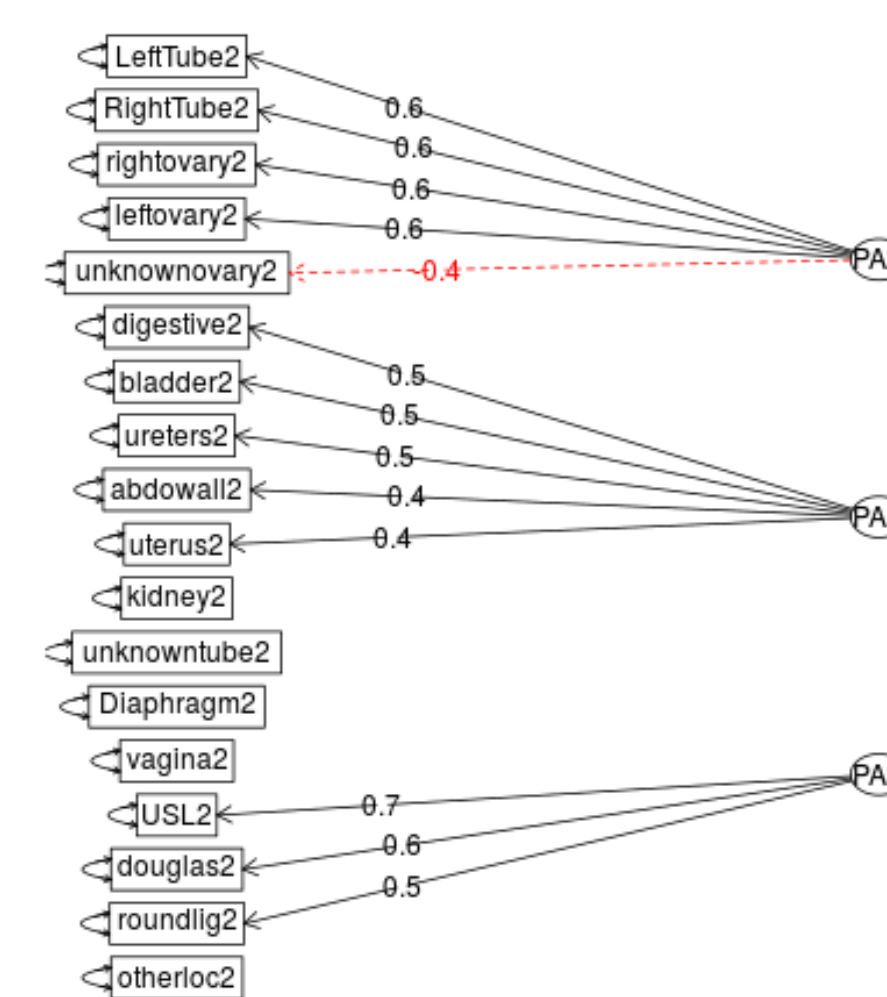Figure 1: Correlation Table of Lesion Locations

Figure 2: Factor Loadings and Lesion Locations

Conclusion

- Factor 1, which includes white individuals who have more complex cases with significant comorbidities, more locations, and adhesions who experience longer diagnostic delay but have higher SES
- Factor 2 may be described as nonparous individuals with multiple locations, high SES, and who experience delayed care
- Factor 3 are individuals who are lower SES, have had multiple pregnancies, with incidental or earlier diagnosis
- Indicates that there may be latent factors underlying where endometriosis lesion locations are found in the body

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