

## Introduction:

It is estimated that between 250,000 and 368,000 people are living with spinal cord injury (SCI) in the United States.<sup>1</sup> There are approximately 17,810 new cases of SCI per year in the United States and approximately 22% of these cases occur in females.<sup>2,3</sup> While many have neurological deficits fertility is generally preserved. While it is still possible to achieve pregnancy, there are multiple complications and challenges that can arise throughout the course of the pregnancy. The American College of Obstetricians and Gynecologists' recommendations for management of patients with spinal cord injuries states that these women "may deliver vaginally" and do not mention SCI as an indication for cesarean delivery.<sup>4</sup> Our anecdotal experience has led us to believe that these women may still be receiving more cesarean sections than the general population despite the fact that history of SCI alone is not an indication for C-section. We conducted a systematic review of the available literature to assess whether or not the data aligns with our anecdotal experiences. Our primary outcome was method of delivery in women with a history of SCI. Secondary outcomes included the incidence of common complications experienced by these women during pregnancy and delivery, such as autonomic dysreflexia (AD) and urinary tract infection.

## Design:

A comprehensive systematic search was conducted to identify primary research articles focusing on adult women with pre-existing SCI, both traumatic and non-traumatic. The search strategy was developed in an iterative manner to refine search terms and results utilizing a combination of Medical Subject Headings (MeSH) and text words in PubMed (U.S. National Library of Medicine, National Institutes of Health). Similar searches were developed using Scopus® (Elsevier) and Cumulative Index to Nursing and Allied Health Literature (CINAHL) Plus with Full Text (EBSCOhost). Reference lists and cited articles of included studies were hand searched. Data extraction and risk of bias were assessed on all included articles.



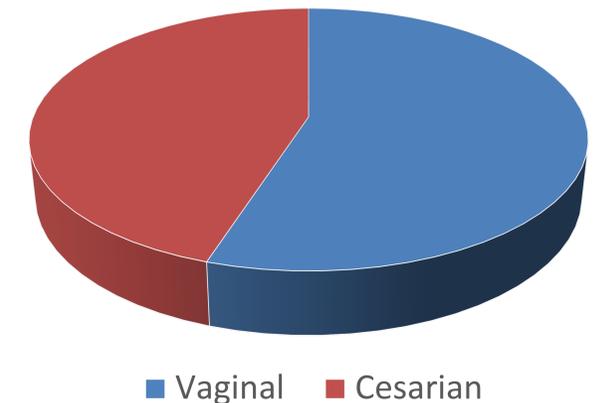
## Results:

1971 citations were reviewed and 22 met the inclusion criteria for this review. Of 22 studies, 10 reported mean age, the average among mothers was 29 at the time of delivery. 7 studies reported mean gestational age, the average among included pregnancies was 38 weeks. Across 22 included studies there were 321 women who reported 419 pregnancies. 118 (45%) reported cesarean deliveries and 231 (55%) reported vaginal or assisted vaginal deliveries. Throughout our search multiple complications were identified. Of 22 studies, 8 did not report complications. Additionally, 16 pregnancies reported no adverse events. 64 pregnancies reported at least one episode of autonomic dysreflexia and 174 reported at least one urinary tract infection. 9 studies reported other complications including 2 cases of bladder stones, one pneumonia, one case of gestational diabetes, 6 deep venous thrombosis/venous thromboembolisms, 8 episodes of increased spasticity, and 17 pressure injuries.

## Conclusions:

This study is one of the first to focus on the incidence of caesarian versus vaginal delivery. Based on the presented evidence, women with spinal cord injuries are having more vaginal deliveries than cesarean deliveries. However, 45% cesarean deliveries is above the national average cesarean births in the United States (where the majority of these pregnancies occurred), which is reported by the CDC as 31.9%. While this population can have significant identified risks such as autonomic dysreflexia and severe UTIs, obstetricians should still be judicious about the decision to take these patients for cesarean sections. The limitations of this study were the paucity of research focused on obstetric outcomes in women with spinal cord injuries. During the full text screening, several articles were excluded because they grouped women with spinal cord injuries with "disabilities" and did not separately identify this population. As described above, these women, as well as those with other physical and intellectual disabilities, have very specific needs and grouped data makes it challenging to use the pre-existing data for future meta-analysis and application to clinical practice. For these reasons we feel it is important to continue research in this area to help and avoid unnecessary cesarean sections. Specifically, we recommend more retrospective and prospective cohort studies which focus on delivery outcomes, ante-partum, and post-partum complications.

## Delivery Type



## References:

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4. Obstetric Management of Patients with Spinal Cord Injuries. *Acog.org.* (2020). Retrieved 25 January 2021, from <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2020/05/obstetric-management-of-patients-with-spinal-cord-injuries>.