

# Pregnancy and Multiple Sclerosis Disease Activity in Women from the New York State Multiple Sclerosis Consortium



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## Background

Multiple sclerosis (MS) is the most common cause of disability in young adults and women of childbearing age. A substantial portion of women with MS will intend to become pregnant after diagnosis.

Though, for many, pregnancy is a time of relative disease quiescence, relapse rates are high postpartum.<sup>1</sup> Additional information is needed about disease activity and disease modifying therapy (DMT) usage before, during and after pregnancy.

## Objective

To investigate the relationship between relapse rates and reproductive events among women with MS and report on DMT exposure before and during pregnancy and its effect on birth outcomes and relapse activity.

Furthermore, the long term effects of pregnancy status on disability later in life were analyzed.

## Methods

A detailed reproductive questionnaire was distributed to women enrolled in the New York State Multiple Sclerosis Consortium (NYSMSC) from 2012 to 2017.

In total, 1,651 women with MS were queried about their reproductive history and reproductive decision-making. Six hundred thirty-five (635) women agreed to participate (38.4% response rate) and completed the questionnaire.

Their data was linked with long-term outcomes (such as Expanded Disability Status Scale [EDSS]) from the NYSMSC registry.

Independent samples t-tests and chi-square tests were used, as appropriate, to examine the differences between groups. Regression analyses were utilized to investigate group difference while adjusting for covariates.

## Results

Out of the 627 subjects with available pregnancy information data, 490 (78.1%) reported a pregnancy. The mean age was 51.3 years (SD=11.6) when filling out the survey with a disease duration of 18.9 (SD=10.3) years from symptom onset to most recent follow-up.

A subset of 109 women who reported a pregnancy *after* MS diagnosis was analyzed to investigate the association between pregnancy and relapse rates.

Of those, 53 (48.6%) reported a relapse in the 24-months prior to pregnancy, while 56 (51.4%) did not. About half of the patients with a relapse before pregnancy had a relapse within 12-months from being pregnant (n=24). Relapses were infrequent during pregnancy (11.9%) and, when they occurred, were more common in the first or second trimester compared to the third trimester. During the 24-month period after birth, 49 (45.8%) patients experienced a relapse, most (n=31) within a year of delivery. See **Table 1**.

Relapses 24- months prior to pregnancy	
Yes	53 (48.6%)
No	56 (51.4%)
Number of relapses 24-months prior to pregnancy (mean (SD) – median)	2.0 (1.3) – 2.0
Relapses during pregnancy	
Yes	13 (11.9%)
No	96 (88.1%)
1 <sup>st</sup> Trimester relapses	5 (38.5%)
2 <sup>nd</sup> Trimester relapses	5 (38.5%)
3 <sup>rd</sup> Trimester relapses	3 (23.1%)
Relapses 24-months postpartum	
Yes	49 (45.8%)
No	58 (54.2%)
Number of relapses 24-months postpartum (mean (SD) – median)	1.3 (0.5) – 1.0

Patients who reported having a relapse during the 24-months prior to pregnancy were more likely to report a relapse in the 24-month postpartum period as well (p=.011).

However, relapses during pregnancy were not associated with postpartum relapse activity (p=.908).

There were 68 (60.2%) patients who reported use of DMTs prior to pregnancy, while 46 (40.7%) did not.

No association was found between DMT use and experiencing relapses before, during, or after pregnancy. Of the 66 people who reported using a DMT 30 (56.6%) had a relapse prior to pregnancy (compared to 23 [43.3%] out of 43 patients who did not use a DMT, p=.412). Eleven (11, 16.2%) patients continued using DMT's during their pregnancy, of which 6 continued throughout their pregnancy.

Birth problems were not associated with continued DMT use, and none of the patients who continued DMTs reported birth problems or were referred to special medical services when their child reached age 1 or 2.

Out of the 100 patients with complete data, 58 breastfed their baby and 42 did not. Five subjects (9.4% out of n=53) were taking DMTs while breastfeeding. There were no adverse outcomes reported in patients who used DMTs while breastfeeding.

Pregnancy (ever versus never) was not associated with long-term (~19 years of disease duration) MS disease progression as measured by EDSS. See **Table 2**.

Table 2. Association between pregnancy (ever/never) and EDSS at most recent follow up.

	Ever Pregnant (n=314)	Unadjusted Never Pregnant (n=93)	p-value	Adjusted* p-value
EDSS at MRF, mean (SD) - median	3.6 (2.0) – 3.0	3.7 (2.3) – 3.0	.756	.107

Legend: EDSS= Kurtzke Expanded Disability Status Scale, MRF= most recent follow-up. \* Adjusted for age at most recent follow-up.

Patients reporting a pregnancy *before* MS were compared to those with a pregnancy *after* MS. After adjusting for age, EDSS at most recent follow-up was not associated with whether a woman reported a pregnancy before or after MS. See **Table 3**.

Table 3. Association between pregnancy (before MS versus after MS) and EDSS at most recent follow up.

	Pregnancy After MS (n=60)	Unadjusted Pregnancy Before MS (n=124)	p-value	Adjusted* p-value
EDSS at MRF, mean (SD) - median	3.0 (1.9) – 3.5	3.5 (2.0) – 3.0	.070	.710

Legend: EDSS= Kurtzke Expanded Disability Status Scale, MRF= most recent follow-up. \* Adjusted for age at most recent follow-up.

## Discussion & Conclusion

Results from our study are in line with recent studies which suggest that pregnancy itself does not increase the risk of MS disease progression.<sup>2,3</sup>

Because MS is most likely to be diagnosed during a woman's childbearing years it is important for clinicians to counsel patients about their reproductive decisions. Larger studies need to be conducted to evaluate pregnancy outcomes and the effect of DMT use during pregnancy.

## References

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## NYSMSC

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