

Disparities in Multiple Sclerosis: Interaction of Sex and Race/Ethnicity

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INTRODUCTION

- African Americans (AA) have more aggressive MS clinically and radiologically than White Americans (WA).¹
- There are additional sex differences noted between different race/ethnicities:²
- African American women are more likely to have MS than White American women.³
- African American men are more likely to have progressive MS than White American men.⁴
- Knowledge on other Black populations with MS worldwide is lacking.
- Somali Americans in Minnesota (>86,000) are a unique but understudied population to evaluate sex differences in MS.

OBJECTIVE

- To investigate sex and racial/ethnic differences between Somali American (SA), AA, and WA persons with MS (pwMS).

METHODS

- SAPwMS and AAPwMS were included from a single center cohort at Mayo Clinic from 1998 till April 2023.
- Terms "Somali", "Somalia", "multiple sclerosis", and "demyelinating disease" were entered on Mayo Data Explorer. A similar process was undertaken for AAPwMS. WApwMS were recruited from outpatient MS Clinic seen between 1997 and Mayo 2023.

METHODS

Inclusion criteria

- Meeting 2017 McDonald criteria for diagnosis of MS, clinically isolated syndrome, or radiologically isolated syndrome meeting the revised 2023 diagnostic criteria.
- Residing within 250 miles of Rochester, Minnesota, USA.
- Sufficient medical records for review.

Chart review and data extraction

- Data was extracted for: age at MS onset; MS treatment use and type; MS phase/phenotype; age at progressive MS onset; proportion with severe MS (EDSS≥6).

Statistics

- Median and IQRs for continuous variables compared with Kruskal-Wallis rank sum test. Chi-square test used for group differences for categorical variables. Cox models used for group differences for time to develop EDSS≥6, progressive MS, first use of MS treatment.

RESULTS

- The study population consisted of 92 AAPwMS, 19 SAPwMS, and 94 WApwMS with similar male/female ratios.
- AAPwMS:
 - 32/92 (35%) male
 - 60/92 (65%) female
- SAPwMS:
 - 7/19 (37%) male
 - 12/19 (63%) female
- WApwMS:
 - 30/94 (32%) male
 - 64/94 (68%) female

RESULTS

Table 1. Demographic Features of SA, AA, and WA Women with MS

	SA (n=12)	AA (n=60)	WA (n=64)	Overall p-value	SA-AA p-value	SA-WA p-value	AA-WA p-value
Age at symptom onset, years	27 (23-33)	31 (25-37)	32 (26-40)	0.240	0.568	0.194	0.169
Annual relapse rate	0.1 (0.0-0.6)	0.3 (0.1-0.6)	0.2 (0.1-0.4)	0.349	0.380	0.764	0.178
Age at progressive MS onset, years	52 (50-55)	44 (36-49)	53 (46-57)	0.075	0.233	0.801	0.030
EDSS≥6 (%)	2 (17)	14 (23)	10 (16)	0.538	0.612	0.928	0.278
Age at EDSS 6+, years	55 (52-58)	47 (37-50)	53 (45-59)	0.211	0.266	0.830	0.114
MS treatment use (%)				0.278	0.188	0.110	0.684
Never treated	42	23	20				
Treated	58	77	80				
Age at treatment initiation, years	33 (28-40)	34 (26-42)	38 (27-42)	0.760	0.733	0.694	0.502

SA= Somali American, AA= African American, WA= White American, EDSS= expanded disability status scale
Continuous variables: median (interquartile range); categorical variables N (%)

Table 2. Demographic Features of SA, AA, and WA Men with MS

	SA (n=7)	AA (n=32)	WA (n=30)	Overall p-value	SA-AA p-value	SA-WA p-value	AA-WA p-value
Age at symptom onset, years	25 (21-32)	32 (26-40)	36 (30-42)	0.073	0.164	0.048	0.134
Annual relapse rate	0.1 (0.1-0.3)	0.2 (0.1-0.6)	0.2 (0.1-0.5)	0.657	0.558	1.000	0.397
Age at progressive MS onset, years	34 (34-34)	37 (33-44)	46 (40-50)	0.101	0.535	0.107	0.077
EDSS≥6 (%)	1 (14)	14 (44)	7 (23)	0.130	0.147	0.601	0.090
Age at EDSS 6+, years	34 (34-34)	40 (23-73)	51 (41-61)	0.102	0.355	0.127	0.073
MS treatment use (%)				0.028	0.448	0.249	0.008
Never treated	14	28	3				
Treated	86	72	97				
Age at treatment initiation, years	27 (20-28)	36 (28-44)	39 (31-49)	0.009	0.046	0.007	0.072

SA= Somali American, AA= African American, WA= White American, EDSS= expanded disability status scale
Continuous variables: median (interquartile range); categorical variables N (%)

CONCLUSIONS

- SA men with MS have MS symptom onset and diagnosis at a younger age than AA and WA men with MS; are started on treatment earlier as well.
- AA men with MS were less likely to be treated than WA men with MS, despite similar proportions with progressive MS.
- AA women with MS are younger at progression compared to WA women with MS despite similar likelihoods of MS treatment initiation.
- Discrepancies in disease evolution and delivery of care are not uniform but vary between racial/ethnic groups and differences are more exaggerated when stratified by sex.
- These observations suggest an intersection of biological and social determinants of health that should be explored in larger studies and considered in planning for overcoming health disparities in MS.

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