Perceived discrimination - a risk factor for brain health

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BACKGROUND

Discrimination refers to the unfair treatment experienced by individuals based on a devalued individual attribute or group identity.¹

Discrimination associated with adverse outcomes:
- Lower psychological well-being²
- Poorer mental and physical health³
- Lower hippocampal volumes and greater white matter hyperintensities⁴, mortality
- Higher odds of all-cause.⁵

We examined how perceived discrimination is associated with multiple indices of brain microstructure.

METHODS

- Data from the Midlife in the United States (MIDUS) neuroscience project, third wave, collected between 2017-2022.
  - n = 147
  - Ages: 48-95 (mean 65, SD 9.44)
  - Females: 87 (59%)
  - Black, Indigenous, and People of Color (BIPOC): 40 (27.2%)
  - Education: High school or less: 38 (25.8%)
  - Lifetime discrimination: 11-item scale⁶.
- Microstructural indices derived for:
  - Diffusion tensor imaging (DTI)
  - Diffusion kurtosis imaging (DKI)
  - White matter tract integrity (WMTI)⁷
  - Neurite orientation dispersion and density imaging (NODDI)⁸
- Voxelwise permutation analyses of linear models⁹ (FWE corrected, P < .05) on whole brain white matter & bilateral hippocampus.
- Models with and without sex, race, education.

RESULTS

Lifetime discrimination accelerated age-associated changes in white matter.

DISCUSSION

- Higher lifetime discrimination was consistent with accelerated aging such as increased mean and radial diffusivities, higher CSF fraction and extra-axonal radial diffusivities.¹⁰
- Converging evidence found using biophysical models (NODDI, WMTI) and statistical models (DKI and DTI) suggest that age-related increase in interstitial water is amplified with discrimination.¹¹
- Findings were consistent with and without inclusion of covariates suggesting perceived discrimination is an independent risk factor.

CONCLUSIONS

- Perceived discrimination experiences may accelerate brain aging and could be considered a risk factor for brain health.
- These data add to the accumulating evidence of detrimental and widespread impact of experiencing discrimination ranging from the personal to the societal level.

REFERENCES

2. Ryff et al., 2004. Book chapter in: How healthy are we?

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