Relationship between Educational Level and Disease Activity in Scleroderma and Systemic Lupus Erythematosus

Alexandra Gross; Sean McNish, MS; Anirban Banerjee, PhD; Victoria K. Shanmugam, MD
Division of Rheumatology, The George Washington University School of Medicine and Health Sciences, Washington DC

Abstract

economic inequalities are important factors which impact thcare outcomes. Education level is a major driver that itates patient ability to navigate a number of healthcare ems and support services. Scleroderma and systemic lupus ematosus (SLE) are two autoimmune diseases in which immune system attacks healthy tissues in the body. The ose of the current study was to investigate the tionship between education levels in patients with oderma and SLE and disease activity scores using lated measures.

Introduction

evious studies, rheumatic disease patients with fewer than 12 of formal education indicated higher self-report scores on five ionnaires in SLE. Research on race-specific mortality rates ed that among whites the risk of death due to SLE was cantly higher in those with less than 12 years of formal tion. An earlier study similarly illustrated that lower formal tion level was associated poorer self-report disease and life action scores.

ed research has been done on the relationship between tion level and scleroderma disease activity. Those with lower l education and scleroderma show significantly higher self- t scores only on one index measured from rheumatic disease nts mentioned above. Recent studies showed that completing education than high school was not associated with higher lity rates in systemic sclerosis.

Methods

esearch was conducted through STOP Scleroderma and The GW Study, biospecimen and data repositories approved by The ge Washington University, IRB (051427, 031614). Subjects gave n informed consent for longitudinal collection of data while they ed treatment according to standard of care. Participants self- ted education levels and were excluded from analysis if they to report education level or demographics.

utcomes are measured with the following activity report scoring s: Systemic Lupus Erythematous Disease Activity Index (SLEDAI), mic Lupus Activity Questionnaire for Population Studies (SLAQ), ystemic Lupus International Collaborating Clinics classification ia (SLICC). In comparison, scleroderma activity is measured using ledsger Disease Severity Index, the modified Rodnan skin score S), and the Scleroderma Health Assessment Questionnaire (S-

Results

Demographics

SLE demographics (age, sex, race) were not significant as a function of highest achieved education level (p = 0.3916, 0.7471, 0.4661 respectively). Scleroderma demographics (age, sex, race) were also not significant as a function of highest education level (p = 0.5758, 0.2487, 0.0881, respectively).

	High School	Tech/Trade	Undergraduate	Post-Graduate	P-value
Scleroderma (n=44)					
Percent of Patients	9.10%	0 %	45.45%	45.45%	
Age, years (mean, SD)	50.3, 9.26	n/a	57.91, 12.93	54.38, 15.5	0.5758
Sex (% Female)	75%	n/a	85%	95%	0.2487
Race (%African American)	50%	n/a	30%	5%	0.0881
Lupus (n=16)					
Percent of Patients	6.25%	6.25%	50%	37.5%	
Age, years (mean, SD)	49.1, 0.00	53.6, 0.00	40.56, 13.01	43.52, 9.73	0.3916
% Female Sex	100%	100%	85.71%	100%	0.7471
Race (% African American)	100%	100%	57.14%	33.3%	0.4661

Table 1: Demographic characteristics of scleroderma patients and lupus patients by the highest level of education level received.

Scleroderma Disease Activity by Education Level

In the population of patients with lower education and scleroderma, there is a significantly higher physician disease activity scores (mRSS, p<0.01 and Medsger, p=0.03) and patient reported disease activity score (S-HAQ, p=0.004).

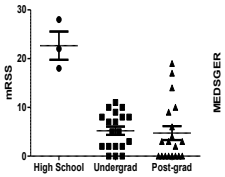

Figure 1: mRSS disease activity score by highest level of education received

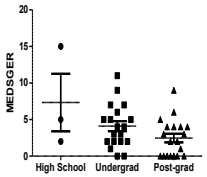

Figure 2: Medsger disease activity score by highest level of education received

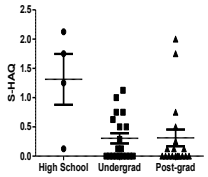

Figure 3: S-HAQ disease activity score by highest level of education received

Lupus Disease Activity by Education Level

When comparing physician (SLEDAI, p = 0.1286 and SLICC, p = 0.5051) and patient reported (SLAQ, p = 0.6239) lupus disease activity scores across highest education level received, there were no significant differences (p = 0.1286).

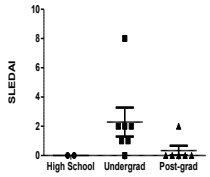

Figure 4: SLEDAI disease activity score by highest level

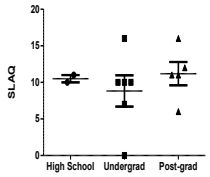

Figure 5: SLAQ disease activity score by highest level

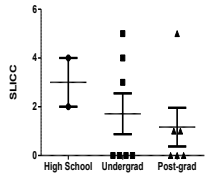

Figure 6: SLICC disease activity score by highest level

Discussion

In this study of scleroderma and lupus patients, we found scleroderma disease activity scores correlate with highest le education achieved. In the population of scleroderma patient had completed lower educational levels disease activity scor both patient and physician reported measures were higher. clinically important because it suggests that higher education might serve as a buffer for disease activity. Similar associations not be demonstrated in the SLE population but this was likely the smaller sample size in this cohort.

This study has several limitations that merit discussion. The h education level reached was self-reported, which can intr response bias. We also had a very small sample size for th subgroup, and several participants with missing data that had excluded from the data analysis. We anticipate ongoing recruitm both the STOP Scleroderma and GW Lupus Studies and f analyses are planned.

Conclusion

Combining validated report measures from both patient physicians (mRSS, SHAQ & Medsger Severity) we are al show the significance between education level achieve disease activity. This suggests that individuals with a l education level are more likely to have increased contro their disease outcomes and activity in scleroderma.

References

[1] Baron, M., Hudson, M., Markland, J., Docherty, P., Fritzler, M,. Jones, N., Kami Khalidi, N., Ligier, S., Masetto, A., Mathieu, J.P., Pope, J., Robinson, D., Smith, D. & E. (2013) Low socioeconomic status (measured by education) and outcomes in s sclerosis: data from the Canadian Scleroderma Research Group, *The Jou Rheumatology, 40*(4), 447-454

[2] Callahan, L.F & Smith, W.J. (1989) Self-report questionnaires in five rheumatic comparisons of health status constructs and associations with formal educatic *Arthritis and Rheumatism, 2*(4), 122-131

[3] Callahan, L.F. & Pincus, T. (1990) Associations between clinical status quest scores and formal education level in persons with systemic lupus erythematosus, *and Rheumatism, 33*(3), 407-411

[4] Ward, M.M. (2004) Education level and mortality in systemic lupus erythe (SLE): Evidence with underascertainment of deaths due to SLE in ethnic minorities education levels, *Arthritis Care & Research, 51*(4), 616-624

Acknowledgements

This work was supported by generous donations from pa to the STOP Scleroderma Study and the GW Lupus Stu