

Photoprotective habits of patients with cutaneous lupus erythematosus

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Introduction

Ultraviolet (UV) radiation, specifically in the spectrum of UVA (wavelength 320-400 nm) and UVB (wavelength 290-320 nm), is a well-documented trigger of skin lesions in patients with cutaneous lupus erythematosus (CLE) (1, 2). Thus, patients are counseled to avoid direct sun exposure and use photoprotection whenever outdoors. Five of the most commonly used photoprotective methods are applying sunscreen, wearing long-sleeved clothing, wearing hats, wearing sunglasses, and seeking shade (3, 4).

Past studies on the photoprotective habits of patients with lupus have mainly focused only on their frequency of sunscreen use. A study of 60 Puerto Rican patients with systemic lupus erythematosus (SLE) showed that whereas 98.3% reported knowing that sunlight can exacerbate cutaneous manifestations of their disease, only 50% actually practiced regular sunscreen use (5). Of patients with SLE in Brazil, 66.7% reported year-round sunscreen use (N=159), compared with only 23.1% of patients with CLE in Ireland (N=52), where the annual UV exposure is lower (6, 7). It was unknown whether patients with CLE compensate by adopting other photoprotective habits.

Project Aim

Our primary aim was to identify subgroups of patients with CLE who are least likely to engage in overall photoprotection and individual photoprotective habits (e.g. wearing sunscreen, hat, long sleeves, and sunglasses; staying under shade or umbrella). The study population was subgrouped by various demographic and clinical characteristics of interest, in order to assess the level of overall photoprotection and frequency of individual photoprotective methods by each subgroup.

Methods

Patient population. A cross-sectional survey to evaluate photoprotective practices was administered to patients with CLE enrolled in the CLE Registry at the University of Texas Southwestern Medical Center in Dallas from June 2010 to April 2012. Patients were eligible for inclusion upon completion of a questionnaire on their photoprotective habits. Patients who did not complete the photoprotective habits questionnaire, or who had a diagnosis of another autoimmune disease other than CLE, were excluded. Additional information regarding patient demographics, Fitzpatrick skin type, disease duration, CLE subtype, number of American College of Rheumatology SLE diagnostic criteria, presence or absence of SLE, number of oral lupus medications, hours spent in the sun per week, occupational setting (outdoors vs. indoors), history of photosensitivity, and history of smoking were collected. Cutaneous and systemic disease activities were assessed using the Cutaneous Lupus Activity and Severity Index (8) and SLE Disease Activity Index (9), respectively. All patients were aged 18 years or older, and were enrolled after signing institutional review board-approved consent forms.

Photoprotective habits survey. The survey consisted of questions on frequency of use for each of 5 different photoprotective methods (e.g., applying sunscreen; wearing hats, long-sleeved shirts, and sunglasses; and staying under shade or umbrella). Frequency of use for each method was assessed using a 4-point Likert scale where 1 = rarely, 2 = sometimes, 3 = often, and 4 = always. Overall sun-protection habits (SPH) scores were calculated for each patient by taking the numeric average of these responses. The range of possible SPH scores was thus 1 to 4, where a higher score implied greater adherence to photoprotective practices. SPH scores have been previously validated in earlier studies on healthy individuals (10, 11).

Statistical analysis. Patient characteristics were summarized using descriptive statistics with frequency counts and percentages. Comparisons between groups on frequencies of photoprotective method use were performed using Fisher exact tests for row x column contingency tables. Comparisons between average Likert scores for patient subgroups were performed using Kruskal-Wallis tests (multiple groups) or Mann-Whitney U tests (2 groups). *P* less than .05 was considered statistically significant.

Funding Sources



Results

Table I. CLE patient characteristics (N=105)

Gender (N, %)		Disease duration (years)* (Avg±SD)	8.1±8.2
Male	15 (14.3%)	CLE subtype* (N, %)	
Female	90 (85.7%)	ACLE	11 (10.6%)
Age at visit (years) (Avg±SD)	45.7±13.2	SCLE	18 (17.3%)
19-30 years (N, %)	14 (13.3%)	DLE	70 (67.3%)
31-40 years	25 (23.8%)	Chilblains lupus	3 (2.9%)
41-50 years	28 (26.7%)	Tumid lupus	2 (1.9%)
51-60 years	24 (22.9%)	Number of SLE criteria met (Avg±SD)	4.5±2.1
61+ years	14 (13.3%)	SLE diagnosis? (N, %)	
Ethnicity (N, %)		Yes	63 (60.0%)
African-American	54 (51.4%)	No	42 (40.0%)
Caucasian	37 (35.2%)	CLASI activity score (Avg±SD)	5.2±5.4
Hispanic	8 (7.6%)	CLASI damage score (Avg±SD)	6.7±6.9
Asian	4 (3.8%)	SLEDAI score (Avg±SD)	1.9±2.5
Mixed	2 (1.9%)	Number of oral lupus medications (Avg±SD)	1.3±1.1
Educational level* (N, %)		Time spent in sun (hrs/wk)* (N, %)	
High school or less	43 (48.3%)	<2	53 (53.0%)
College or equivalent	36 (40.4%)	2-4	23 (23.0%)
Graduate school or higher	10 (11.2%)	4-6	6 (6.0%)
Income (yearly)* (N, %)		>6	18 (18.0%)
Less than \$10,000	37 (37.4%)	Work outdoors for occupation? (N, %)	
\$10,000 - \$50,000	37 (37.4%)	Yes	12 (12.1%)
\$50,000 - \$100,000	19 (19.2%)	No	87 (87.9%)
More than \$100,000	6 (6.1%)	History of photosensitivity (N, %)	
Fitzpatrick skin type* (N, %)		Yes	87 (82.9%)
I-II	22 (22.2%)	No	18 (17.1%)
III-IV	33 (33.3%)	History of smoking* (N, %)	
V-VI	44 (44.4%)	Never	52 (50.0%)
Season of visit (N,%)		Past	16 (15.4%)
Spring	21 (20.0%)	Current	36 (34.6%)
Summer	36 (34.3%)		
Fall	23 (21.9%)		
Winter	25 (23.8%)		

Abbreviations: ACLE, Acute cutaneous lupus erythematosus; CLASI, Cutaneous Lupus Activity and Severity Index; CLE, cutaneous lupus erythematosus; DLE, discoid lupus erythematosus; SCLE, subacute cutaneous lupus erythematosus; SLE, systemic lupus erythematosus; SLEDAI, Systemic Lupus Erythematosus Disease Activity Index.
*Information on specific patient characteristics were not available for the following: education (16 unavailable), income (6 unavailable), Fitzpatrick skin type (6 unavailable), disease duration (2 unavailable), CLE subtype (1 unavailable), time spent in sun (5 unavailable), work outdoors (6 unavailable), and history of smoking (1 unavailable).

Figure 1. Mean SPH scores of CLE patients subgrouped by Fitzpatrick skin type (A) and by age at visit (B).

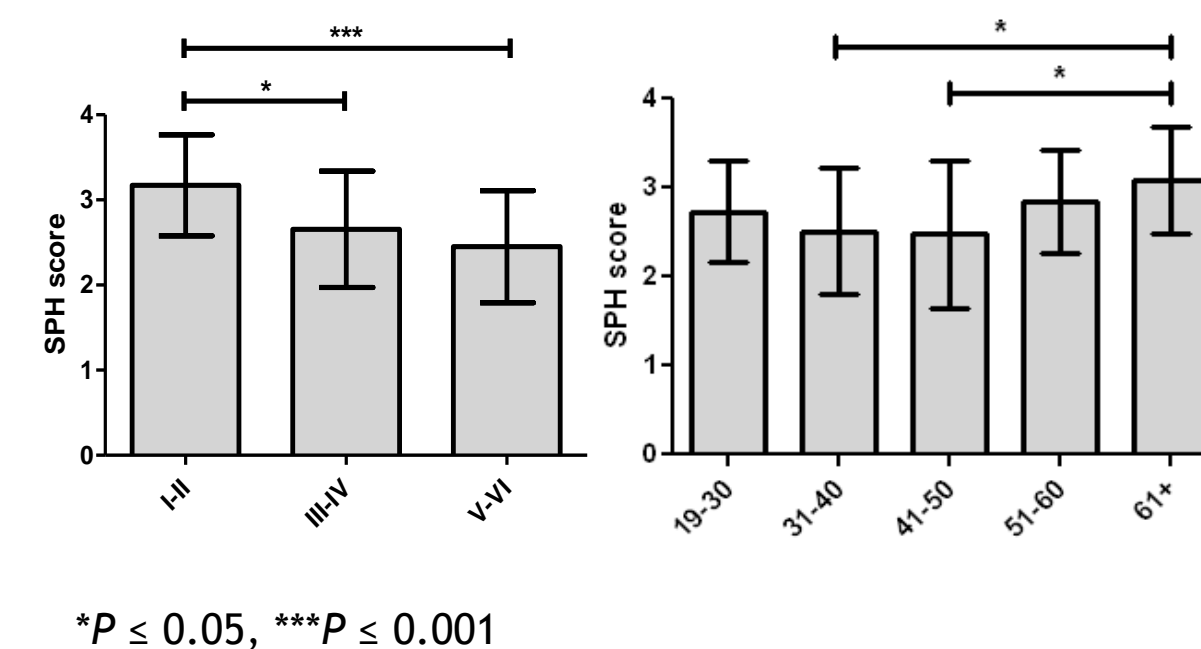


Figure 3. Frequency of sunscreen use in CLE patients subgrouped by gender (A) and Fitzpatrick skin type (B).

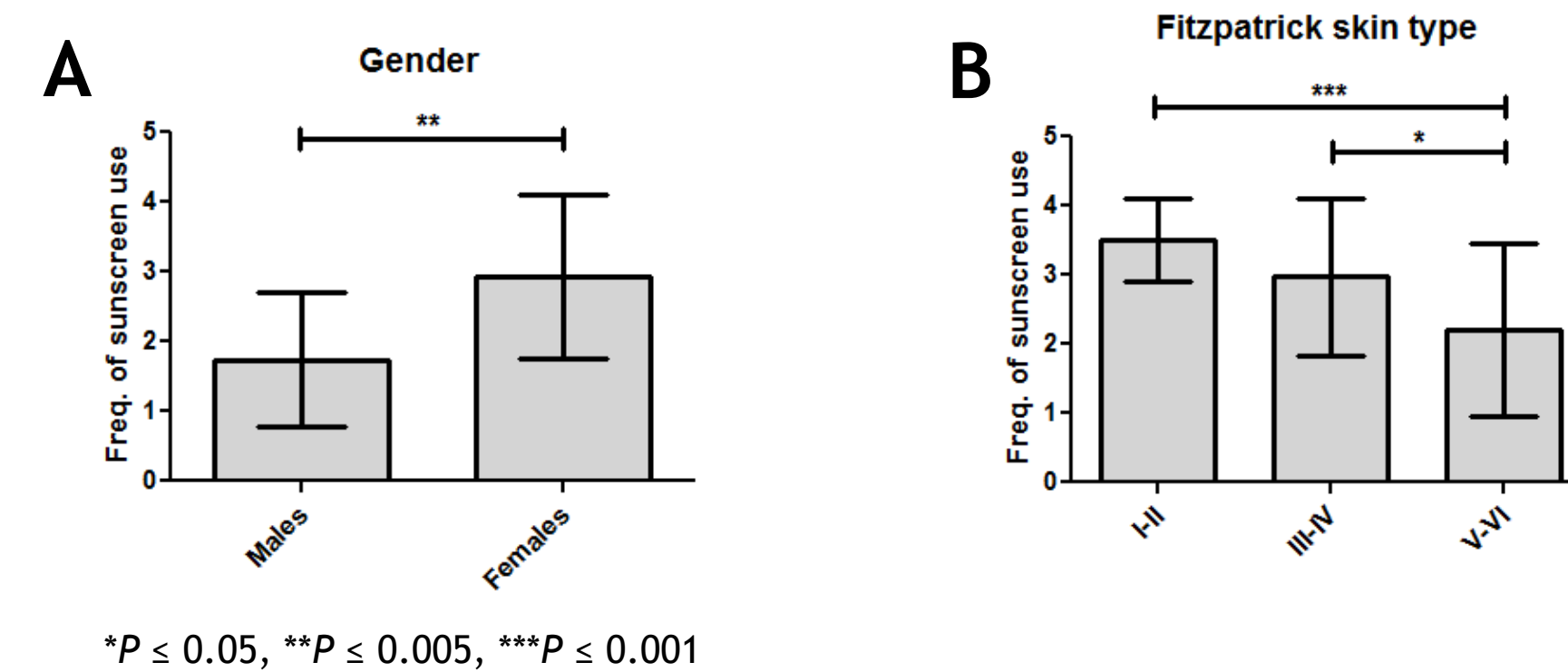


Figure 4. Frequency of shade/umbrella use in CLE patients subgrouped by gender (A), hours spent in the sun per week (B), and occupational setting (C).

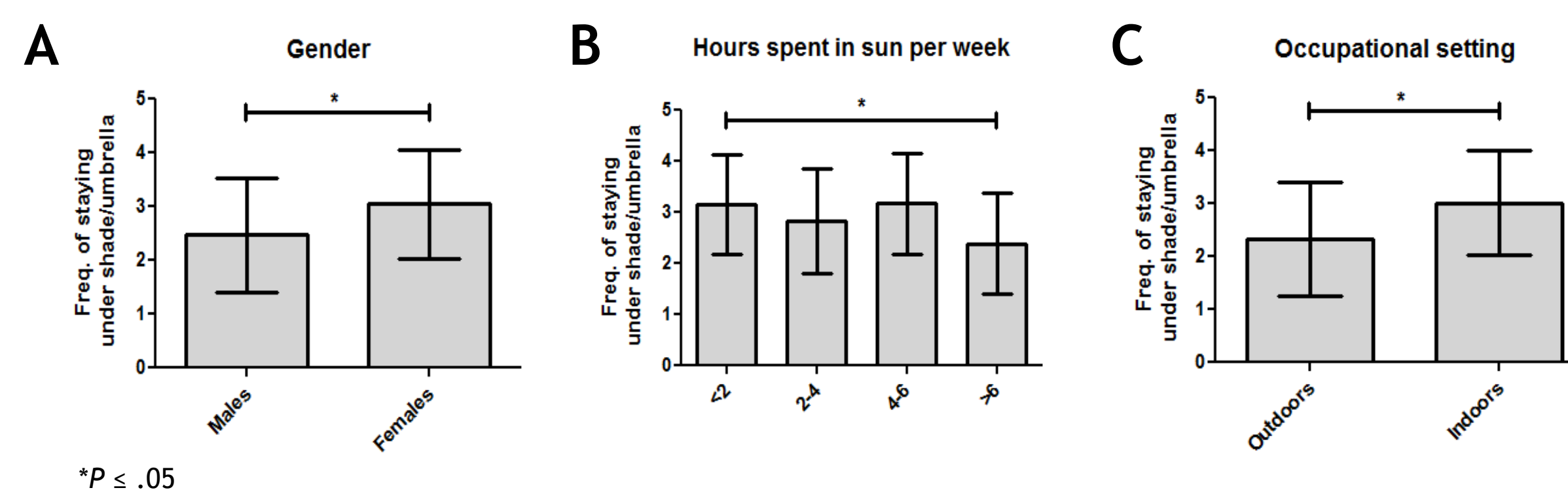


Figure 5. Frequency of hat use in CLE patients subgrouped by gender (A) and age at visit (B).

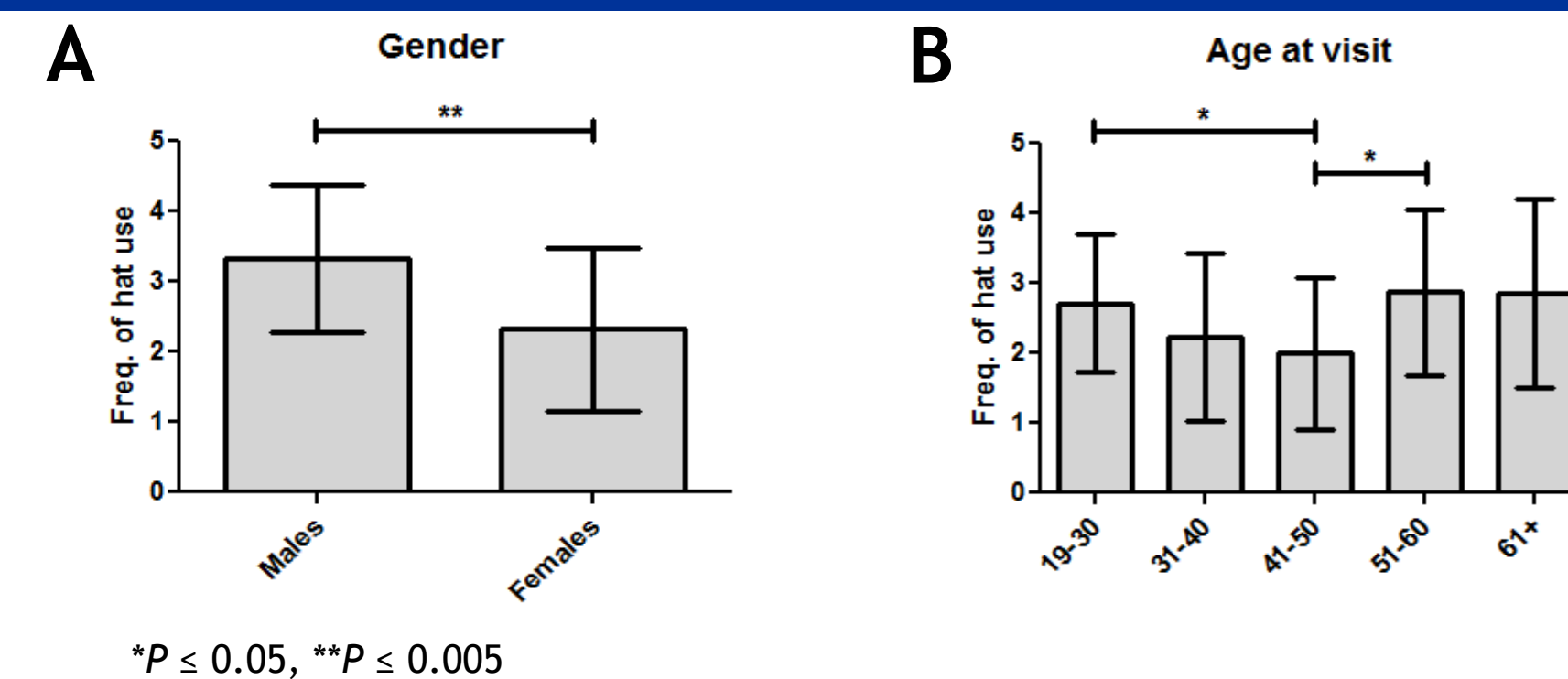


Figure 6. Frequency of long-sleeved shirt use in CLE patients subgrouped by educational level (A) and history of photosensitivity (B).

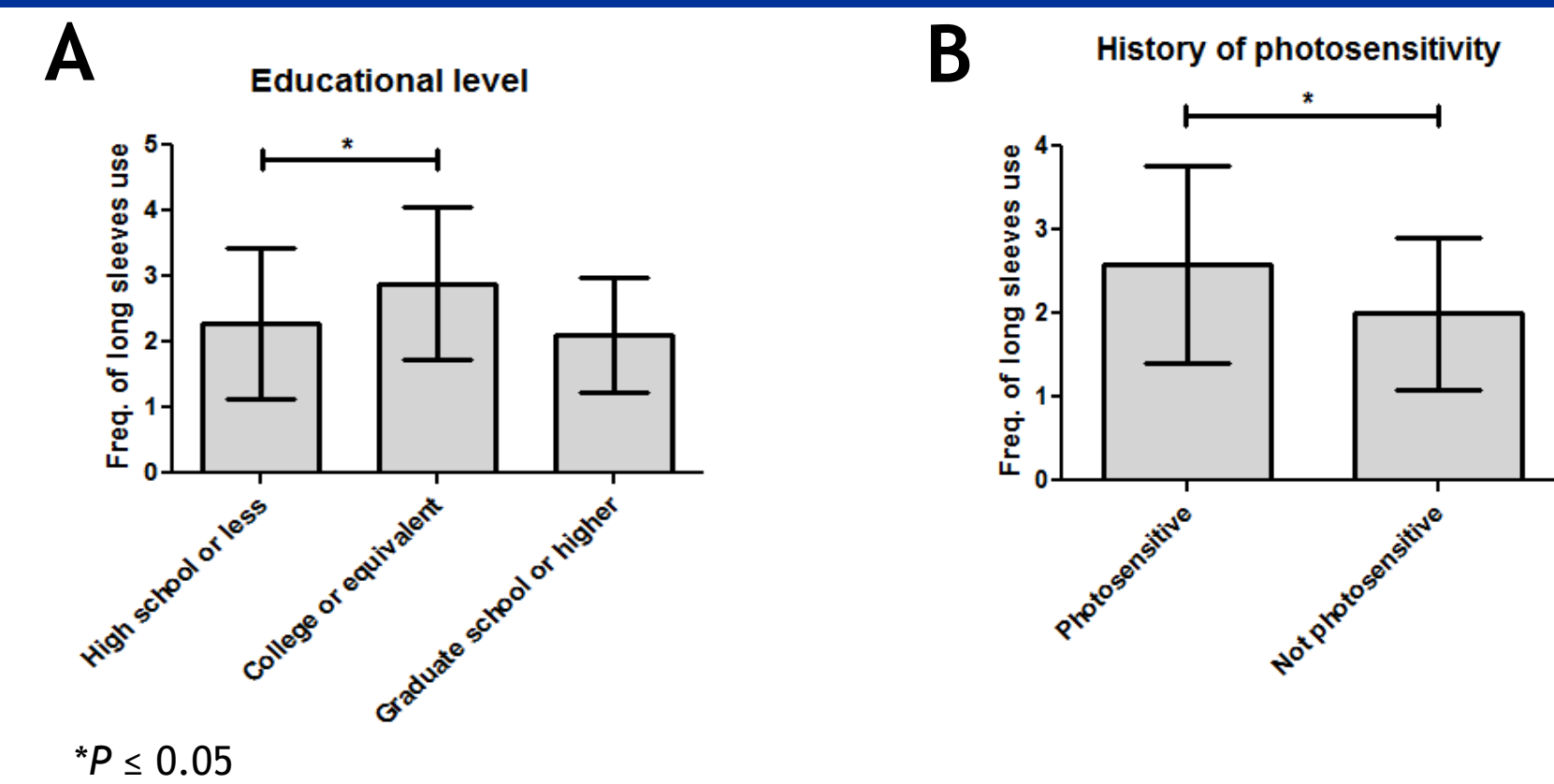
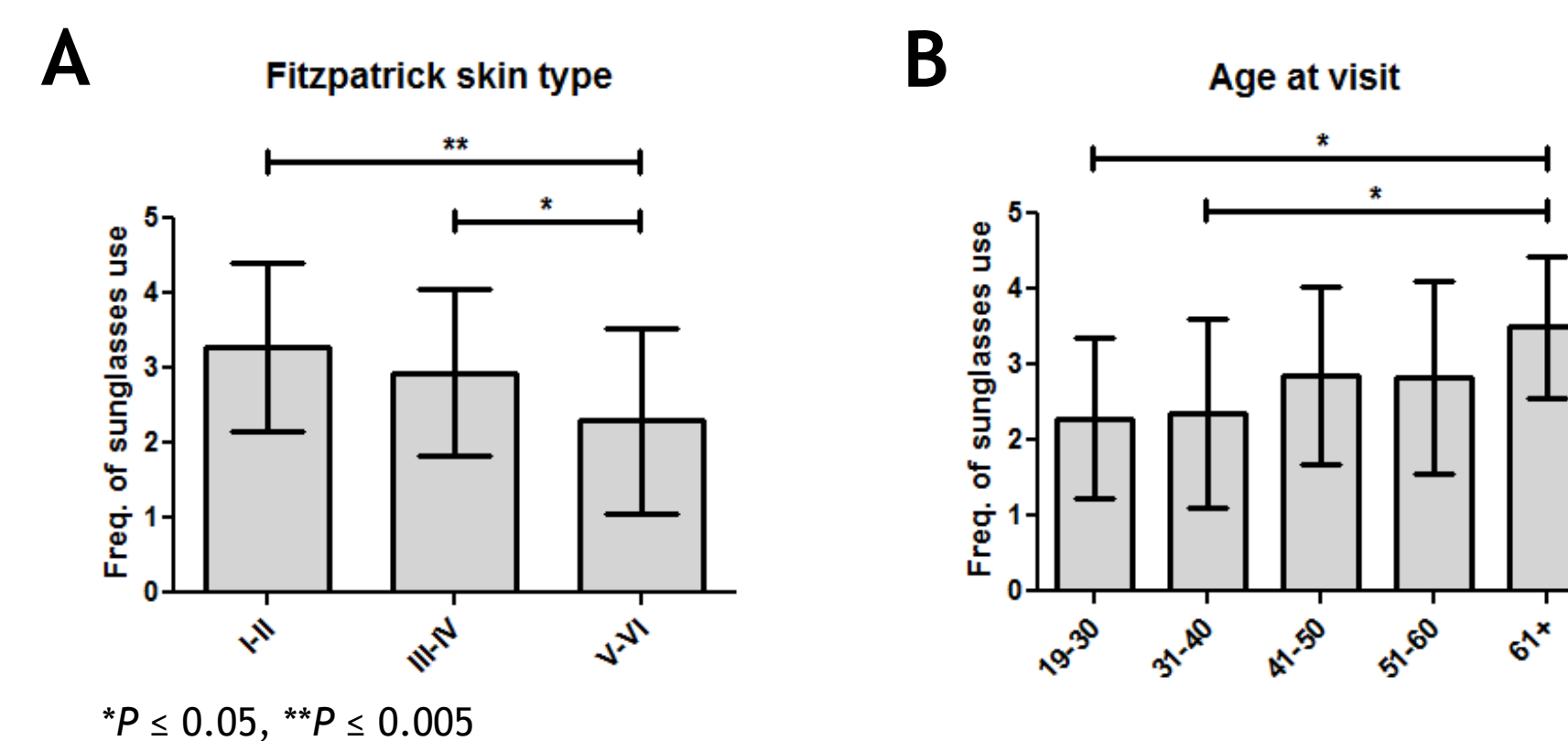


Figure 7. Frequency of sunglasses use in CLE patients subgrouped by Fitzpatrick skin type (A) and age at visit (B).



Conclusions

- Overall SPH scores were significantly lower for the medium-skinned (i.e., skin types III-IV) and dark-skinned (i.e., skin types V-VI) patients with CLE than for light-skinned patients (i.e., skin types I-II). Specifically, sunscreen and sunglasses use were significantly lower among the dark-skinned patients compared to others.
 - We hypothesize that the lower incidences of sunburn and skin cancer in dark-skinned patients (12,13) may create a false misconception among these patients that they are protected against the damaging effects of UV radiation.
- Patients between the ages of 31-50 years also had significantly lower overall SPH scores than the other CLE patients.
 - This age group overlaps with the most common age range for onset of lupus erythematosus, which is between 20-40 years of age, and highlights their need for photoprotection education.
- Wearing sunscreen and staying under shade or umbrella were methods for which male patients with CLE lagged significantly behind females, although males wore hats more frequently than did females.
 - We hypothesize that the gender difference in photoprotective methods is attributable to cultural customs, and that the photoprotective methods favored by men may be less effective than those favored by women.
- Moving forward, identification of these photoprotection-deficient subgroups will assist clinicians in targeting specific patients with CLE who are in greatest need of education regarding photoprotection.

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