



Differences in Skin Aging Characteristics in Women of East Asian vs European Descent Residing in the Same Geographic Location

Linna Guan¹, Gefei Alex Zhu¹, Shufeng Li¹, Michaella Montana¹, Dale Kern², Helen Knaggs², Anne L. S. Chang¹

¹Department of Dermatology, Stanford School of Medicine, Redwood City, CA. ² NuSkin Enterprises, Inc. Provo, UT.



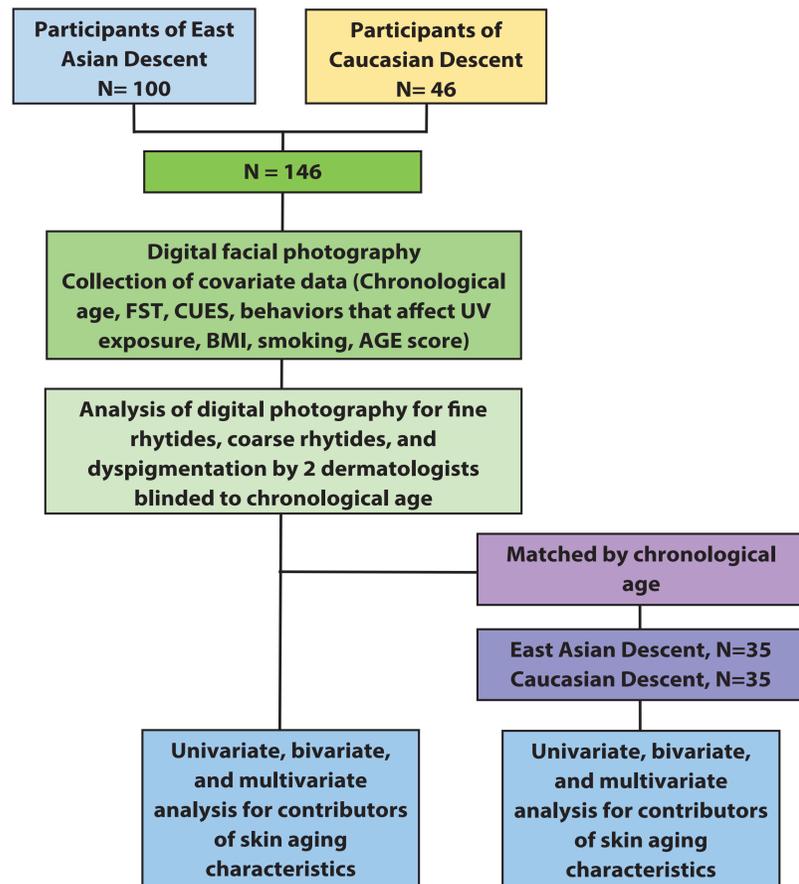
BACKGROUND

Previous studies have shown that genetics play an important role in the appearance of skin aging. However, prior studies have been conducted in groups of genetically distinct individuals residing in different geographic locations. To more directly compare the two groups, we investigate the relative contributions of extrinsic and intrinsic factors on skin aging parameters in a genetically diverse population residing in the San Francisco Bay Area.

OBJECTIVES

- 1) To investigate clinically visible differences in skin aging parameters between two genetically distinct populations residing in the same geographic locale.
- 2) To understand the relative contributions of genetic (intrinsic) factors and environmental (extrinsic) factors on skin aging.

METHODS



RESULTS

Table 1. Multivariate associations of fine rhytides.

Variable	Unmatched			Age- Matched		
	Linear regression coefficient (95% CI)	P	Adjusted R ²	Linear regression coefficient (95% CI)	P	Adjusted R ²
Caucasian descent	0.77 (0.33 – 1.21)	0.0007	0.3577	0.61 (0.11 – 1.11)	0.02	0.2786
Age, years	0.06 (0.03 – 0.09)	<.0001		0.02 (-0.02 – 0.06)	0.4	
Weight	0.08 (-0.23 – 0.39)	0.6		-0.02 (-0.44 – 0.39)	0.9	
Positive smoking history	-0.02 (-0.39 – 0.34)	0.9		-0.09 (-0.54 – 0.36)	0.7	
Lifetime UV exposure (by ln(CUES)), quartile						
2nd vs 1st	-0.2 (-0.59 – 0.19)	0.3		0.1 (-0.47 – 0.67)	0.7	
3rd vs 1st	0.02 (-0.38 – 0.41)	0.9		-0.03 (-0.54 – 0.47)	0.9	
4th vs 1st	0.03 (-0.42 – 0.49)	0.9		0.28 (-0.27 – 0.82)	0.3	
Blistering sunburns						
1-5 vs 0	-0.02 (-0.35 – 0.31)	0.9		0.05 (-0.4 – 0.49)	0.8	
6-10 vs 0	-0.22 (-0.81 – 0.37)	0.5		-0.16 (-0.78 – 0.45)	0.6	
11+ vs 0	0.43 (-0.16 – 1.02)	0.1		0.53 (-0.18 – 1.23)	0.1	
Composite Sun Protective Behavior*						
9-12 vs 2-8	-0.002 (-0.35 – 0.35)	1		0.19 (-0.25 – 0.64)	0.4	
13-16 vs 2-8	-0.17 (-0.56 – 0.22)	0.4	-0.13 (-0.64 – 0.37)	0.6		

*Composite Sun Protective Behavior includes a sum of all sun protective behavior scores which includes sun screen usage, wearing long sleeves, wearing hats, and seeking shade.

Table 2. Multivariate associations of coarse rhytides.

Variable	Unmatched			Age- Matched		
	Linear regression coefficient (95% CI)	P	Adjusted R ²	Linear regression coefficient (95% CI)	P	Adjusted R ²
Caucasian descent	0.57 (0.27 – 0.87)	0.0002	0.3743	0.64 (0.22 – 1.07)	0.004	0.3847
Age, years	0.03 (0.01 – 0.05)	0.0007		0.04 (0.01 – 0.08)	0.01	
BMI	0 (-0.21 – 0.22)	1		0.09 (-0.26 – 0.44)	0.6	
Positive smoking history	-0.08 (-0.34 – 0.17)	0.5		-0.43 (-0.81 – -0.05)	0.03	
Lifetime UV exposure (by ln(CUES)), quartile						
2nd vs 1st	0.04 (-0.23 – 0.31)	0.8		0.19 (-0.29 – 0.67)	0.4	
3rd vs 1st	0.03 (-0.24 – 0.3)	0.8		0.43 (0.004 – 0.86)	0.05	
4th vs 1st	0.11 (-0.2 – 0.42)	0.5		0.34 (-0.13 – 0.8)	0.2	
Blistering sunburns						
1-5 vs 0	0.09 (-0.14 – 0.31)	0.4		0.06 (-0.32 – 0.44)	0.7	
6-10 vs 0	0.33 (-0.08 – 0.73)	0.1		0.47 (-0.05 – 1)	0.08	
11+ vs 0	0.5 (0.1 – 0.9)	0.02		0.48 (-0.12 – 1.08)	0.1	
Composite Sun Protective Behavior*						
9-12 vs 2-8	0.13 (-0.11 – 0.37)	0.3		-0.15 (-0.53 – 0.22)	0.4	
13-16 vs 2-8	0.08 (-0.18 – 0.35)	0.5	-0.01 (-0.44 – 0.42)	1		

*Composite Sun Protective Behavior includes a sum of all sun protective behavior scores which includes sun screen usage, wearing long sleeves, wearing hats, and seeking shade.

SAMPLE AGE-MATCHED PAIR



Asian Descent
Age: 70
Fine Rhytid Score: 1
Coarse Rhytid Score: 0
Dyspigmentation Score: 2



Caucasian Descent
Age: 70
Fine Rhytid Score: 1
Coarse Rhytid Score: 2
Dyspigmentation Score: 3

DISCUSSION AND CONCLUSION

We demonstrate fully adjusted multivariate linear regression models showing a strong association between Caucasian race and fine rhytides independent of extrinsic risk factors.

This suggests that:

- 1) Skin aging parameters may differ between genetically distinct groups
- 2) fine rhytides are often considered an intrinsic skin aging characteristics, and molecular analysis of tissue from the two groups may reveal what aging related pathways underlie these clinical differences

REFERENCES

- 1) Int J Cosmet Sci. 2009 Oct 1;31(5):361–7.
- 2) J Dermatol Sci. 2005 Dec 1;40(3):187–93.
- 3) J Cosmet Sci. 2004 Aug;55(4):351–71.

FINANCIAL DISCLOSURES

Funding for this study was provided by NuSkin International, Inc. Authors DK and HK are employees of NuSkin International, Inc. No relevant financial relationships to disclose for all other authors.