

Table S1 Characteristics of participants who were recruited for this study

Individual data	Result
Gender (woman)	70
Age, years	
Mean $\pm$ standard deviation (range)	40.1 $\pm$ 10.0 (23.8–56.8)
Median	39.6
Smoking status	
Non-smokers	70
Smokers	0
BMI, kg/m ²	
Mean $\pm$ standard deviation (range)	24.8 $\pm$ 3.9 (18–34.9)
Median	23.8
Age groups*, years	
25-year-old group	
Mean $\pm$ standard deviation (range)	25.1 $\pm$ 0.9 (23.8–26.5)
Median	25.2
30-year-old group	
Mean $\pm$ standard deviation (range)	30.3 $\pm$ 1.0 (28.9–32.0)
Median	30.4
35-year-old group	
Mean $\pm$ standard deviation (range)	35.1 $\pm$ 1.0 (33.6–36.7)
Median	35.1
40-year-old group	
Mean $\pm$ standard deviation (range)	39.9 $\pm$ 1.2 (38.3–41.8)
Median	39.6
45-year-old group	
Mean $\pm$ standard deviation (range)	45.1 $\pm$ 1.0 (43.5–46.5)
Median	45.2
50-year-old group	
Mean $\pm$ standard deviation (range)	49.9 $\pm$ 1.3 (48.1–51.8)
Median	49.7
55-year-old group	
Mean $\pm$ standard deviation (range)	55.1 $\pm$ 1.1 (53.8–56.8)
Median	55.1

*, professional dermatologists assessed the degree of aging in the participants using the VISIA skin imaging system and categorized them into seven age groups. BMI, body mass index.

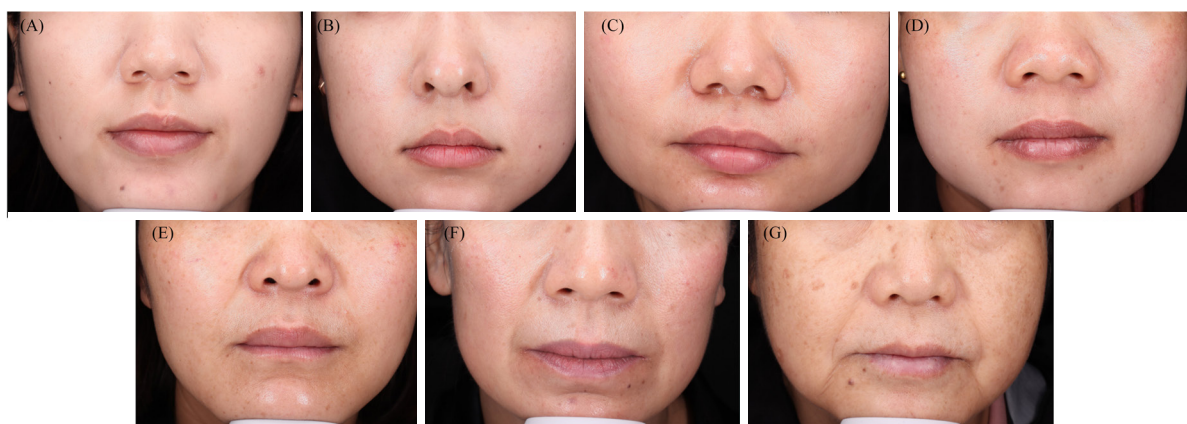


Figure S1 Representative images from the 7 age groups by using VISIA imaging system. This images are published with the participants' consent.

Table S2 Characterization performance of ultrasound B-mode (using envelope amplitude) and ultrasound parameters (using small-window entropy and Nakagami distribution) for the assessment of skin aging at a depth of 1 mm

Parameter	Cutoff value	Sensitivity, %	Specificity, %	LR+	LR–	PPV, %	NPV, %	AUROC
B-mode								
Intervals of 5 years old	1,510	70	60	1.75	0.50	63.64	66.67	0.51
Intervals of 10 years old	1,459	70	90	7.00	0.33	87.5	75	0.77
Intervals of 15 years old	1,524	80	60	2.00	0.33	66.67	75	0.71
Intervals of 20 years old	1,455	70	70	2.33	0.43	70	70	0.68
Intervals of 25 years old	1,566	90	80	4.50	0.13	81.82	88.89	0.88
Intervals of 30 years old	1,785	100	90	10.00	0	90.91	100	0.99
Small-window entropy								
Intervals of 5 years old	4.130	40	90	4.00	0.67	80	60	0.63
Intervals of 10 years old	4.103	80	90	8.00	0.22	88.89	81.82	0.86
Intervals of 15 years old	4.101	70	90	7.00	0.33	87.5	75	0.87
Intervals of 20 years old	4.089	90	90	9.00	0.11	90	90	0.96
Intervals of 25 years old	4.021	90	90	9.00	0.11	90	90	0.98
Intervals of 30 years old	4.005	90	90	9.00	0.11	90	90	0.98
Nakagami (m)								
Intervals of 5 years old	0.8566	90	40	1.50	0.25	60	80	0.62
Intervals of 10 years old	0.8468	90	70	3.00	0.14	75	87.5	0.91
Intervals of 15 years old	0.8447	90	90	9.00	0.11	90	90	0.93
Intervals of 20 years old	0.8415	100	90	10.00	0	90.91	100	1
Intervals of 25 years old	0.8396	100	90	10.00	0	90.91	100	1
Intervals of 30 years old	0.8290	100	90	10.00	0	90.91	100	1
Nakagami (Ω)								
Intervals of 5 years old	2504814	80	50	1.60	0.40	61.54	71.43	0.55
Intervals of 10 years old	3019611	50	80	2.50	0.63	71.43	61.54	0.60
Intervals of 15 years old	2673098	70	60	1.75	0.50	63.64	66.67	0.59
Intervals of 20 years old	2532260	50	80	2.50	0.63	71.43	61.54	0.60
Intervals of 25 years old	2141279	80	40	1.33	0.50	57.14	66.67	0.51
Intervals of 30 years old	3704929	90	90	9.00	0.11	90	90	0.98

LR+, positive likelihood ratio; LR–, negative likelihood ratio; PPV, positive predictive value; NPV, negative predictive value; AUROC, area under the receiver operating characteristic curve.

Table S3 Characterization performance of ultrasound B-mode (using envelope amplitude) and ultrasound parameters (using small-window entropy and Nakagami distribution) for the assessment of skin aging at a depth of 1.5 mm

Parameter	Cutoff value	Sensitivity, %	Specificity, %	LR+	LR–	PPV, %	NPV, %	AUROC
B-mode								
Intervals of 5 years old	1,478	40	80	2.00	0.75	66.67	57.14	0.57
Intervals of 10 years old	1,368	60	60	1.50	0.67	60	60	0.52
Intervals of 15 years old	1,362	60	50	1.20	0.80	54.55	55.56	0.53
Intervals of 20 years old	1,374	60	90	6.00	0.44	85.71	69.23	0.68
Intervals of 25 years old	1,158	80	40	1.33	0.50	57.14	66.67	0.51
Intervals of 30 years old	1,735	90	70	3.00	0.14	75	87.5	0.90
Small-window entropy								
Intervals of 5 years old	4.117	90	60	2.25	0.17	69.3	85.71	0.71
Intervals of 10 years old	4.104	90	60	2.25	0.17	69.3	85.71	0.80
Intervals of 15 years old	4.101	90	70	3.00	0.14	75	87.5	0.87
Intervals of 20 years old	4.099	80	90	8.00	0.22	88.89	81.82	0.92
Intervals of 25 years old	4.062	90	80	4.50	0.13	81.82	88.89	0.93
Intervals of 30 years old	4.001	100	90	10.00	0	90.91	100	1
Nakagami (m)								
Intervals of 5 years old	0.8439	60	90	6.00	0.44	85.71	69.23	0.78
Intervals of 10 years old	0.8363	80	90	8.00	0.22	88.89	81.82	0.86
Intervals of 15 years old	0.8283	90	70	3.00	0.14	75	87.5	0.90
Intervals of 20 years old	0.8208	100	90	10.00	0	90.91	100	1
Intervals of 25 years old	0.8121	100	90	10.00	0	90.91	100	1
Intervals of 30 years old	0.8018	100	90	10.00	0	90.91	100	1
Nakagami (Ω)								
Intervals of 5 years old	3,242,115	30	90	3.00	0.78	75	56.25	0.53
Intervals of 10 years old	2,261,554	80	50	1.60	0.40	61.54	71.43	0.64
Intervals of 15 years old	3,082,398	60	80	3.00	0.50	75	66.67	0.65
Intervals of 20 years old	2,267,277	90	50	1.80	0.20	64.29	83.33	0.65
Intervals of 25 years old	2,120,925	80	50	1.60	0.40	61.54	71.43	0.66
Intervals of 30 years old	3,622,252	70	70	2.33	0.43	70	70	0.64

LR+, positive likelihood ratio; LR–, negative likelihood ratio; PPV, positive predictive value; NPV, negative predictive value; AUROC, area under the receiver operating characteristic curve.