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Dr Liu conceived and designed the study, collected the data, performed statistical analysis, interpreted results of analysis, and prepared and revised the manuscript. Ms Yu participated in data collection, laboratory work, interpretation of the results, and preparation of the manuscript. Dr Chang, Dr Hui, and Dr Yhu-Chering Huang contributed to data collection and manuscript preparation. Dr Yu-Huei Huang conceived and designed the study; collected the data; and contributed to statistical analysis, interpretation of the results, and preparation and revision of the manuscript. All the authors have reviewed and approved the submitted version of the manuscript.

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REFERENCES

1. Ng CY, Huang YH, Chu CF, Wu TC, Liu SH. Risks for Staphylococcus aureus colonization in patients with psoriasis: a systematic review and meta-analysis. *Br J Dermatol*. 2017;177:967-977.
2. Ku JH, Winthrop KL, Varley CD, et al. Implications for biologic therapy: Staphylococcus aureus decolonization of individuals with a history of recurrent skin and soft-tissue infections. *JAMA Dermatol*. 2013;149:986-989.
3. Honda H, Krauss MJ, Coopersmith CM, et al. Staphylococcus aureus nasal colonization and subsequent infection in intensive care unit patients: does methicillin resistance matter? *Infect Control Hosp Epidemiol*. 2010;31:584-591.
4. Brown LD, Cai TT, DasGupta A. Interval estimation for a binomial proportion. *StatSci*. 2001;16:101-117.
5. Grice EA, Kong HH, Conlan S, et al. Topographical and temporal diversity of the human skin microbiome. *Science*. 2009;324:1190-1192.

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Tattooing: A national survey in the general population of France

To the Editor: The prevalence of tattooing in France was estimated at 14% in 2016.[1,2] We report a national survey among a nonselected sample of the general French population. The survey was conducted online between April and August 2017 among 5000 individuals age 15 years and older who were selected with use of a stratified random sampling method from a database including more than 1 million Internet users who agreed to participate in various panel surveys. We inquired about sociodemographics, smoking, skin conditions, tattoo(s) and body piercings (ear lobe excluded), motivations for getting tattooed, and cutaneous side effects. Quality of life was evaluated by using the 12-Item Short Form Health Survey.

The prevalence of tattooed people was 16.8% (9.9% with 1 tattoo and 6.9% with >1) (Table I). Of the tattooed individuals, 37% had 1 or more body piercings. Tattooed individuals were more likely to smoke (44.8% vs 23.5% [$P < .01$]), especially those with more than 1 tattoo (49.3% vs 41.8% [$P = .03$]). Women were more likely to have only 1 tattooed area (51.5% vs 44.1% [$P = .008$]), and men were more likely to be heavily tattooed (13.6% of men but only 8.4% of the women had tattoos on ≥5 areas [$P = .01$]).

Men had their first tattoo at a younger age than women did (24.0 ± 8.9 vs 26.5 ± 10.5 years [$P < .001$]). Age at first tattoo was lower for those who had previously discussed getting a tattoo with their parents (20.4 ± 5.3 vs 26.5 ± 10.4 years) and 28% of those younger than 18 years (minors) made their decision alone. Sexuality was a strong driving factor for men, whereas body reclamation was a strong driving factor for women. Multivariate analysis showed that being age 25 years or younger at the time of tattooing was associated with testing one's own stamina (odds ratio [OR], 10; 95% confidence interval [CI], 3.59-28.5; $P < .0001$) and body embellishment (OR, 1.74; 95% CI, 1.23-2.45; $P = .0002$). Men were more likely to get at a tattoo for individuality (OR, 1.49; 95% CI, 1.08-2.06; $P = .015$), for cultural or religious reasons (OR, 2.37; 95% CI, 1.25-4.50; $P = .008$), and for sexuality (OR, 2.18; 95% CI, 1.27-3.73; $P = .0048$). Regaining control of one's body was a strong driving motivation for women, and the lack of a reason was prominent among the elderly (OR, 2.11; 95% CI, 1.35-3.29; $P < .0001$). Tattooed individuals were more likely to report acne, contact eczema, and atopic dermatitis (Table II), and 17% reported a past or present

Table I. Characteristics of the study population

Characteristic	Total, n (%) (N = 5000)	Male, n (%) (n = 2443)	Female, n (%) (n = 2557)	*P* value
Prevalence by sex				
	840 (16.8)	351 (14.4)	489 (19.1)	<.001
Prevalence by age group, y				
15-24 (n = 802)	189 (23.5)	72 (18)	117 (29.1)	<.001
25-34 (n = 790)	213 (26.9)	92 (23.6)	121 (30.2)	<.001
35-49 (n = 1302)	274 (21)	115 (17.7)	159 (24.4)	<.001
50-64 (n = 1256)	144 (11)	66 (10.9)	78 (11.9)	NS
65-80 (n = 850)	20 (2.3)	6 (1.5)	14 (3.1)	NS
Tattoos by anatomic distribution				
Back	417 (49.6)	124 (35.4)	293 (59.9)	<.0001
Shoulder	297 (35.4)	216 (61.7)	81 (16.6)	<.0001
Forearm	266 (31.7)	117 (33.4)	149 (30.5)	NS
Leg	165 (19.6)	56 (16.0)	109 (22.3)	.02
Trunk	136 (16.2)	67 (19.1)	69 (14.1)	NS
Foot	87 (10.4)	20 (5.7)	67 (13.7)	.0002
Hand	85 (10.1)	36 (10.3)	49 (10.0)	NS
Intimate area/genital	83 (9.9)	37 (10.6)	46 (9.4)	NS
Neck	59 (7.0)	19 (5.4)	40 (8.1)	NS
Face	53 (6.3)	18 (5.1)	35 (7.2)	NS
No. of anatomic tattooed areas				
1	407 (48.4)	155 (44.1)	252 (51.5)	.008
2	199 (23.7)	89 (25.4)	110 (22.5)	NS
3	89 (10.6)	35 (10.0)	54 (11.0)	NS
4	56 (6.7)	24 (6.8)	32 (6.5)	NS
5	24 (2.9)	11 (3.1)	13 (2.7)	NS
6	21 (2.5)	12 (3.4)	9 (1.8)	NS
7	6 (0.7)	3 (0.85)	3 (0.6)	NS
8	9 (1.1)	3 (0.85)	6 (1.2)	NS
≥9	29 (3.4)	19 (5.4)	10 (2.0)	.035
Tattoo decision making: alone or discussion with family or friends*				
Alone	486 (57.8)	210 (59.8)	276 (56.4)	NS
Parents	143 (17.0)	68 (19.3)	75 (15.3)	NS
Family	101 (12.0)	39 (11.1)	62 (12.7)	NS
Friends	108 (12.8)	32 (9.1)	76 (15.5)	.006
Significant other	92 (10.9)	28 (8.0)	64 (13.1)	.02
Self-reported motivations for getting tattooed†				
Body embellishment	245 (28.5)	93 (25.7)	152 (30.6)	NS
Individuality, distinction	195 (22.7)	96 (26.5)	99 (19.9)	.02
Body appropriation	116 (13.5)	34 (9.4)	82 (16.5)	.003
Eroticism, sexuality	59 (6.9)	35 (9.7)	24 (4.9)	.005
Commitment	48 (5.6)	23 (6.3)	25 (5.0)	NS
Tradition, culture	42 (4.9)	26 (7.2)	16 (3.2)	.008
Endurance/stamina	19 (2.2)	6 (1.6)	13 (2.6)	NS
No reason	323 (37.6)	122 (33.7)	201 (40.4)	.04
Quality of life score on the SF-12	With 1 tattoo	With >1 tattoo	With no tattoos (reference)	
Physical composite score	51.2 ± 8.2	—	51.2 ± 8.3	NS
	—	49.9 ± 7.9		.007
Mental composite score	41.3 ± 10.1	—	44.4 ± 9.5	<.001
	—	41.6 ± 9.1		<.0001

NS, Not significant; *SF-12*, 12-Item Short Form Health Survey.

*The total is more than 100% because respondents could give several answers.

†The overall number of respondents is 859; 19 nontattooed individuals who had their tattoo removed self-reported their motivations for getting tattooed.

Table II. Skin conditions and self-reported side effects in the tattooed population

Skin condition/side effect	Tattooed, n (%) (n = 840)	Not tattooed, n (%) (n = 4160)		*P* value
Skin condition				
Acne	115 (13.7)	408 (9.8)		.0008
Contact eczema	69 (8.2)	185 (4.4)		.000006
Psoriasis	45 (5.4)	199 (4.8)		NS
Atopic dermatitis	41 (4.9)	144 (3.5)		.046
Rosacea	29 (3.4)	158 (3.8)		NS
Vitiligo	5 (0.5)	18 (0.4)		NS
Adverse skin reaction in tattoo, self-reported				
Past or present	146 (17)	—		—
Solved	92 (10.9)	—		—
Wax and waning	38 (4.5)	—		—
Current	16 (1.9)	—		—
Adverse event symptoms	≥1 tattoo	1 tattoo (n = 495)	>1 tattoo (n = 345)	
Delayed healing	35 (4.2)	13 (2.6)	22 (6.4)	.007
Irritation	61 (7.3)	19 (3.8)	42 (12.2)	.000005
Infection	37 (4.4)	8 (1.6)	29 (8.4)	.000002
Itch	32 (3.8)	12 (2.4)	20 (5.8)	.012

Multivariate analyses of self-reported tattoo complications*

Adverse event	Significant variable	OR (95% CI); *P* value
Delay in healing	Male sex	3.72 (1.73-8.00); .0008
	Age <25 y	2.29 (1.12-4.70); .023
	Contact eczema	2.71 (1.09-6.76); .03
Irritation	Male sex	3.00 (1.68-5.37); .0002
	Multiple tattoos	2.95 (1.64-5.28); .0003
	Atopic eczema	4.80 (2.10-11.0); .0002
	Any skin disease	3.01 (1.70-5.31); .0001
Infection	Multiple tattoos	4.86 (2.17-10.9); .0001
	Any skin disease	2.43 (1.21-4.92); .013
Itch	Age <25 y	2.75 (1.33-5.68); .01

CI, Confidence interval; *NS*: not significant; *OR*, odds ratio.
*Analyzed variables are age younger than 25 years and older than 55 years, sex, tobacco, acne, contact eczema, atopic dermatitis, psoriasis, and any skin disease.

cutaneous problem on 1 of their tattoos. Irritation was the most common problem (41%), followed by infection (25%), delay in healing (24%), and itch (22%). Tattooed men had problems with their tattoos more often than tattooed women did (26% vs 11.3% [$P < .01$]). Those reporting complications were also significantly younger (30.2 ± 9.7 vs 38.5 ± 13.2 years [$P < .0001$]). The multivariate analyses are summarized in Table II.

Having tattoo(s) was associated with lower physical and mental quality of life, especially for those with more than 1 tattoo. Linear regression analysis confirmed that lower physical ($P < .001$) and mental ($P = .0098$) scores were significantly associated with having more than 1 tattoo.

Our results illustrate the overall trend in Western countries. Tattooing is associated with lower quality of life scores, especially in the case of individuals with several tattoos. Only 1.9% of respondents reported chronic cutaneous complaints on 1 of their tattoos.[3] The question of whether atopic dermatitis/contact eczema is more frequently associated with tattoo irritation or whether tattooing is responsible for atopic dermatitis/contact eczema should be investigated.

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REFERENCES

1. Kluger N. Epidemiology of tattoos in industrialized countries. *Curr Probl Dermatol*. 2015;48:6-20.
2. Institut d'Études Opinion et Marketing en France et à L'International. Les Francais et les tatouages. Available at: https://www.ifop.com/publication/les-francais-et-le-tatouage/. Accessed April 13, 2018.
3. Bjerre RD, Ulrich NH, Linneberg A, Duus Johansen J. Adverse reactions to tattoos in the general population of Denmark. *J Am Acad Dermatol*. 2018;79:770-772.

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Nipple and areola lesions: Dermoscopy and reflectance confocal microscopy features

To the Editor: Only case reports have analyzed the dermoscopic and reflectance confocal microscopy (RCM) features of the lesions of nipple and areola complex (NAC).[1-3] We retrospectively evaluated the clinical, dermoscopic, and RCM features of 131 consecutive NAC lesions diagnosed at 13 University Centers (Tables I and II). The final diagnosis was based on histopathology or on clinical follow-up for ≥1 year to confirm benignity. Three experts in noninvasive skin imaging (EC, MA, and SG) independently evaluated dermoscopic and RCM criteria blinded from the diagnosis. Criteria were considered present when ≥2 experts agreed (Table II). A 7-point checklist[4] and Pellacani criteria[5] have been developed for melanocytic lesions but were applied to all lesions because in the NAC it is not always easy to clinically establish if lesions are melanocytic or not. Considering Paget disease (PD) and eczema, we found a statistically significant difference for both for the presence of spongiosis (Fisher exact test, $P = .017$) and dark Paget cells ($P = .038$) under RCM but no difference for the presence of dotted ($P = .587$) and linear vessels ($P = 1.000$) and milky-red areas ($P = .052$) under dermoscopy.

Diagnostic accuracy of the 3 types of examination was calculated on the agreement of ≥2 of 3 investigators for 79 lesions with clinical, dermoscopic, and RCM images. Sensitivity and 95% confidence intervals (95% CIs) for malignancy of the clinical, dermoscopic, and RCM examination were 83% (73-90%), 67% (55-77%), and 83% (73-90%) and specificity (95% CIs) were 90% (80-95%), 97% (90-99%), and 94% (86-98%), respectively. Specificity of dermoscopy for malignancy was high despite the high number of false positive nevi on the 7-point checklist because experts likely gave their dermoscopic diagnoses having clinical images available and with a holistic assessment of dermoscopic images. Sensitivity (95% CIs) for PD of the clinical, dermoscopic, and RCM examination were 100% (80-100%), 85% (62-96%), and 86% (62-96%) and specificity (95% CIs) were 54% (31-75%), 100% (80-100%), and 100% (80-100%), respectively. Clinical examination had 100% sensitivity because all unilateral plaques/patches and erosions were possible PD. Conversely, RCM and dermoscopy had 100% specificity for PD, better than clinical examination. RCM superiority in specificity was predictable because of the ability of this technique to identify Paget cells and spongiosis. Experts diagnosed PD in 86% of cases at RCM, but it should be considered that classic RCM presentation of Paget cells as "round and dark intraepidermal cavities" was found in only half of PD cases (Table II). Although there are no validated dermoscopic criteria for eczema and PD of NAC, it is possible that a more irregular vascular pattern in PD allowed the differential diagnosis with eczema. Interinvestigator agreement in the diagnosis evaluated by Fleiss kappa increased from clinical (poor or moderate) to dermoscopic (moderate) and RCM (excellent) examination. Although our study does not have the ability to draw conclusions about primary melanoma, noninvasive imaging techniques added relevant information and seem to improve the differential diagnosis of PD and eczema.

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