

LETTER TO THE EDITOR

SARS-CoV-2: skin diseases, mask wearing and unpleasant sensations

Editor

The requirement to wear masks as part of barrier measures to prevent the transmission of SARS-CoV-2 has generated many dermatological issues, for healthcare professionals (HCP) and the general population.¹ These problems may be related to skin changes due to occlusion, i.e. increased temperature and humidity, water loss, friction etc.² While some studies focussed on skin changes in the general population, others suggested that facial skin diseases worsen with wearing permanently a mask.³ To date, no study has evaluated these consequences in real-life settings in a large population-based multinational representative sample.

We performed a survey in 4 countries (France, Italy, Spain, Germany), in a representative sample generated using the quota method.

We first compared the population with no skin diseases, those with skin diseases not involving the face and those with a skin disease involving the face using the chi-square test for categorical variables and Kruskal–Wallis for the responders' age. Patients we asked about different skin sensation due to the mask and those reporting at least one were categorized as having 'uncomfortable sensation due to the mask' which we used as outcome in a multivariate logistic regression.

Among the 8077 respondents, 7221 had to wear a mask during the day (89.4%). The median age was 32.00 IQR [46.00–60.00]; they were 3641 (50.4%) women (Table 1). Among them, 28% ($n = 2021$) declared to suffer from skin diseases [atopic dermatitis/eczema (7.73%; $n = 558$) – psoriasis (4.06%; $n = 293$) – acne (6.44%; $n = 465$) – rosacea (2.60%; $n = 188$) – chronic hand eczema (1.48%; $n = 107$) – vitiligo (1.25%; $n = 90$) – hidradenitis suppurativa (0.46%; $n = 3$)].

Unpleasant sensation due to wearing a mask was reported by 3072 (42.5%) respondents (itch 17.3%, tingling 17.7%, burning sensation 7.5%, sensation of tightness 13.7%). Each type of unpleasant sensations was more prevalent in subjects with dermatoses and among them in those with dermatoses involving the face (Table 1). The multivariate analysis with uncomfortable sensations as outcome (Fig. 1) showed an OR of 2.02 IC 95% [1.76, 2.33], ($P < 0.001$) for skin diseases without face involvement and of 3.2 IC 95% [2.73, 3.75], ($P < 0.001$) for skin diseases with face involvement. The longer the responders wore their mask the more they reported unpleasant sensations: for 0–

4 h vs 4–8 h OR 2.24 IC 95% [2, 2.52], ($P < 0.001$) and vs >8 h the OR 2.69 IC 95% [2.32, 3.13], ($P < 0.001$).

Studies from Poland showed that pruritus is a major symptom caused by mask wearing, affecting up to 30% of HCP.⁴ Similar symptoms were reported in the general population. Worsening of face skin conditions such as seborrheic dermatitis, acne and rosacea has been reported and was confirmed by our study.^{3,5} Moreover, pruritus was reported having increased in HCP with facial dermatosis while acne seems worsened in almost half of the responders.^{4,6} Increased sweating was also reported.²

These issues are not only inconvenient; they also cause the frequent manipulation of the mask, a factor that has been reported to be involved in viral transmission. This is particularly relevant in people with facial skin diseases, especially when they are HCP. Thus, it may be critical to consider in the future all symptoms

Table 1 Demographic data

	No skin disease N = 5196		Skin disease not involving the face N = 1075		Skin disease involving the face N = 950		P value
	N	%	N	%	N	%	
Country							<0.001
France	1445	27.8	213	19.8	227	23.9	
Germany	1044	20.1	177	16.5	179	18.8	
Spain	1319	25.4	359	33.4	325	34.2	
Italy	1388	26.7	326	30.3	219	23.1	
Age	49 ± 28		45 ± 24		35 ± 25		<0.001
Sex							
Women	2544	49	555	51.6	542	57.1	<0.001
Men	2652	51	520	48.4	408	42.9	
Area							0.003
Urban area	2451	47.2	536	49.9	474	49.9	
Semi-urban area	1627	31.3	334	31.1	322	33.9	
Rural area	1118	21.5	205	19.1	154	16.2	
Wear Mask							<0.001
0–4 h	2861	55.1	514	47.8	370	38.9	
4–8 h	1604	30.9	384	35.7	369	38.8	
>8 h	731	14.1	177	16.5	211	22.2	
Unpleasant sensation	1846	35.5	571	53.1	655	68.9	<0.001
Itch	722	13.9	233	21.7	292	30.7	<0.001
Tingling	714	13.7	246	22.9	321	33.8	<0.001
Sensation of tightness	612	11.8	168	15.6	210	22.1	<0.001
Burning sensation	299	5.8	111	10.3	128	13.5	<0.001
Protect from others look	2180	42	383	35.6	554	58.3	<0.001

Variable	N	Odds ratio	p
Age	7221	0.83 (0.80, 0.86)	<0.001
Sex	Men	Reference	
	Women	1.10 (0.99, 1.21)	0.082
Country	France	Reference	
	Germany	2.48 (2.12, 2.90)	<0.001
	Spain	1.22 (1.05, 1.41)	0.008
	Italy	1.38 (1.20, 1.59)	<0.001
Area	Urban area	Reference	
	Semi-urban area	0.95 (0.84, 1.07)	0.365
	Rural area	0.91 (0.79, 1.05)	0.208
Skin Disease	No Skin Disease	Reference	
	Skin Disease Not Involving the Face	2.02 (1.76, 2.33)	<0.001
	Skin Disease Involving the Face	3.20 (2.73, 3.76)	<0.001
Wear Mask	0-4 Hours	Reference	
	4-8 Hours	2.24 (2.00, 2.52)	<0.001
	> 8 Hours	2.69 (2.32, 3.13)	<0.001
Protect from others look	7221	1.26 (1.14, 1.40)	<0.001

Figure 1 Multivariate analysis with uncomfortable sensations as outcome.

when designing the inside part of masks. Obviously, side effects of prolonged mask wearing are not new, with similar findings already observed during the SARS epidemic.^{7,8} However, today these inconveniences have been observed in a much larger population and thus may have important consequences in terms of wearing correctly the mask helping to protect oneself and the others.

Therefore, dermatologists play an important role in public health by managing skin conditions related to wearing masks.

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Conflicts of interest

MSA is employee of Pierre Fabre Dermo-Cosm etique, and other authors do not have any conflict of interest to declare.

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