

LETTER

Inconveniences due to the use of face masks during the COVID-19 pandemic: A survey study of 876 young people

Dear Editor,

The use of face masks by general population became ubiquitous during the COVID-19 pandemic.¹ Personal protective equipment (PPE) can cause harm to the skin²⁻⁵; however, little is known on inconveniences of face masks wearing.⁴⁻⁷ This study was undertaken to analyze the most bothersome issues reported by young people using face protection during current viral pandemic.

The survey was created with Google Forms and posted on Facebook groups for students in Poland. The recall period was the last 7 days. The data were collected in 48 hours (April 12-14, 2020). At that time wearing face masks in Poland was not mandatory. A number of 2315 answers were received, 8 questionnaires were removed (incompleteness of data). Out of 2307 responders, 1393 (60.4%) declared face masks wearing. As 517 (37.1%) participants used several types of face masks, they were excluded, and finally, 876 questionnaires were considered. The age of the group was 18-27 years. The responses were downloaded for statistical analysis (Statistica 13; Statsoft, Tulsa, Oklahoma).





Out of 876 participants, only 27 people (3.1%) did not complain of any problems related to face mask wearing. Out of all reported inconveniences, difficulty in breathing appeared to be the most common one (35.9%), followed by warming/sweating (21.3%), misting up of the glasses (21.3%), and slurred speech (12.3%). Interestingly, other skin bothersome reactions related to wearing of face masks were reported less often (itch—7.7%, skin irritation—0.9%). Difficulties in wearing the glasses and limited visibility were rarely reported (0.3% each). In the model of logistic regression analysis, we found that wearing surgical masks among the other types of masks showed significantly lower risk for the development of most common bothersome issues, as difficulty in breathing, warming/sweating, glasses misting up, slurred speech, and itch (odds ratio [OR] = 0.42, 0.60, 0.10, 0.17, and 0.04, respectively). In contrast, cloth masks use was related to higher risk of difficulty in breathing (OR = 1.56), warming/sweating (OR = 1.31), glasses misting up (OR = 1.92), slurred speech (OR = 1.86), and itch (OR = 2.99). Respirators were found to be at increased risk only for glasses misting up (OR = 1.65) (Table 1).

Adverse reactions to PPE were mostly reported in health care workers (HCW).²⁻⁵ Foo et al⁵ during the severe acute respiratory syndrome (SARS) epidemic in 2003 found that face rash appeared in 35.8% and itch in 51.4% of HCW wearing the professional face protection. Recently, authors from China pointed out that 17.1% of HCW

developed adverse reactions of respiratory tract due to face mask use. Skin reactions were quite common, including among others, itch (14.9%), redness/erythema (12.6%), rash (12.4%), xerosis (11.6%) burning (3.7%), and pain/prickling (3.2%).⁴

To the best of our knowledge, we presented for the first time a real life data on the most bothersome aspects of face mask use within general public. We documented that wearing surgical masks was linked to significantly lower risk of adverse reactions. This is supported by Roberge et al,⁷ who postulated that surgical mask use at low-moderate work rate was not associated with clinically significant physiological impact. However, some participants complained on skin irritation (11%), moisture build up (11%), sticking to the skin (11%), significant face warmth (26%), and pinching (7%). During the viral pandemics due to shortage of medically graded masks, cloth masks became more popular.⁸ Although there is no enough strong evidence the cloth masks may be only slightly less effective than surgical masks in blocking emission of particles. They are thought to be 5-fold more effective than not wearing face protection.⁹

Based on our results with a special focus on the tolerance of the face masks, we postulate to use professional surgical masks, if possible, for general public during viral pandemic.

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TABLE 1 Logistic regression parameters for the most common inconveniences due to the use of face masks as an effect^a

Variable	Difficulty in breathing			Warming/sweating			Glasses misting up			Slurred speech			Itch		
	P value	OR	95% Confidence	P value	OR	95% Confidence	P value	OR	95% Confidence	P value	OR	95% Confidence	P value	OR	95% Confidence
Surgical mask	.0000	0.4216	(0.3101, 0.5731)	.0006	0.5978	(0.4454, 0.8024)	.0000	0.1025	(0.0701, 0.1501)	.0000	0.1684	(0.1087, 0.2610)	.0000	0.0382	(0.0140, 0.1044)
Cloth mask	.0000	1.5552	(1.3364, 1.8098)	.0001	1.3139	(1.1428, 1.5105)	.0000	1.9178	(1.6562, 2.2207)	.0000	1.8648	(1.5711, 2.2133)	.0000	2.9902	(2.2845, 3.9140)
Respirators N95 + FFP	.5140	0.9460	(0.8006, 1.1177)	.3176	0.9215	(0.7851, 1.0817)	.0000	1.6533	(1.3826, 1.9772)	.0857	1.1538	(0.9801, 1.3582)	.3209	0.8941	(0.7169, 1.1152)

^aA logistic regression for the dependent variables (inconveniences linked to the mask wearing), establishing the crucial impacting factors (masks types as independent variables) and their odds ratios (ORs) was performed. The P values were considered significant if $P < .05$ (bold). FFP, filtering facepiece.

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