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Title: Awareness of obesity among patients with psoriasis

Running head: Psoriasis patients' obesity awareness

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Accepted Article

Dear Editor,

Chronic plaque psoriasis is frequently associated to metabolic comorbidities, including obesity that have an important impact on the disease.¹⁻⁴ A mendelian randomization analysis showed that obesity is a risk factor for the development of psoriasis and psoriatic arthritis.⁵ Moreover, obesity is associated with greater psoriasis severity and a reduced response to systemic treatments.⁶ Conversely, loss of the excess weight through low calorie diet and/or bariatric surgery improves the response to systemic pharmacological treatments, and improves the patient's metabolic profile.^{7,8} Losing weight is recommended for all obese patients,⁹ and understanding if obese patients with psoriasis are aware of the importance of addressing obesity and are interested in accepting a diet regimen might have important implications in daily practice. The objective of the study was to evaluate the patients' awareness of the negative effect of overweight/obesity on their general health and on psoriasis, and their motivation to lose excess weight. This was a survey based on a structured questionnaire, designed *ad hoc* with the help of nutritionists. Consecutive patients attending the Divisions of Dermatology at multiple hospitals in Italy between 1 April and 1 July 2022 were considered eligible. Inclusion criteria were age ≥ 18 years, clinical diagnosis of moderate-to-severe chronic plaque psoriasis and body mass index (BMI) ≥ 25 and willingness to participate in the survey. Exclusion criteria were the actual participation to a weight-loss program with a nutritionist/dietician. Socio-demographic and clinical variables were collected. The study was approved by the local Ethical committees and patients provided written informed consent (Protocol n. 0146095).

The clinical and sociodemographic characteristics of the participants (N=114) are summarized in Table 1. Sixty-six out of 114 (57.9%) were male. Patients had a mean age (\pm SD) of 49.1 ± 11.9 years and BMI of 32.1 ± 5.0 . The results of the survey are reported in Table 2. One hundred and eight out of 114 (98.2%) patients were aware of the negative effect of obesity on their general health, whereas 47 (42.7%) and 66 (60%) were not aware of the negative effect of obesity on psoriasis severity and response to treatment, respectively. A total of 108 out of 114 (94.7%) said they wanted to lose weight. In a numeric range scale from 0 (no will) to 10 (maximum will) the mean will to lose weight was 7.8 ± 2.5 . Obese patients were more motivated to lose weight compared to overweight patients. In a range from 0 to 10, obese patients reported a mean score of 8.54 ± 1.76 versus overweight patients a mean score of 6.92 ± 2.97 ($p=0.005$). Among the motivations driving weight lost, being healthier was weighted 8.2 ± 2.2 , to be accepted by others weighted 5.2 ± 3.0 and to like themselves 6.4 ± 2.8 . Female patients were more driven by the desire to like themselves

compared to males (7.02 ± 2.87 vs 5.89 ± 2.67 ; $p=0.036$). A total of 96 out of 114 (87.5%) patients have declared interest in being referred to a nutritionist. Losing weight is a crucial step in the management of obesity, lessening its impact on cardiovascular risk and mortality and enhancing the response to treatments.¹⁰ This survey shows that a significant percentage of obese patients with psoriasis are interested in participating in nutritional programs to reduce excess body weight, they are well aware of the negative effects of obesity on their health, whereas they are less informed of the impact of obesity on psoriasis.

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Table 1. Descriptive clinical and sociodemographic characteristics of the patients

Number of patients	114
Age, years	49.1 ± 11.9
Gender, male	66 (57.9)
Weight, Kg	95.2 ± 18.8
Height, cm	170.7 ± 11.3
BMI, kg/m ²	32.1 ± 5.0
Overweight (25≤BMI<30)	42 (36.8)
Class I obesity (30≤BMI<35)	46 (40.4)
Class II obesity (35≤BMI<40)	20 (17.5)
Class III obesity (BMI≥40)	6 (5.3)
Abdominal circumference, cm	109.8 ± 14.7
Hip circumference, cm	113.3 ± 13.7
CRP, mg/dL	1.1 ± 1.5
Fasting blood glucose, mg/dL	106.4 ± 40.5
Type 2 diabetes	26 (22.8)
Arterial hypertension	34 (29.8)
PsA	27 (23.7)
PASI	12.9 ± 2.6
Hypercholesterolemia	57 (50.0)
Hypertriglyceridemia	43 (37.7)

Continuous and categorical variables are presented as means ± standard deviation (SD) and proportions, respectively; CRP, C-reactive protein; BMI, body mass index; PASI, psoriasis area and severity index; PsA, psoriatic arthritis.

Table 2. Survey on awareness and motivation to lose excess weight

Question	Reply	Number (%)
Are you aware of the negative effect of obesity on your health? [^]	Yes	108 (98.2)

	Do not know	2 (1.8)
Are you aware of the positive effect of losing excess weight on your health? [^]	Yes	101 (91.8)
	No	7 (6.4)
	Do not know	(1.8)
Are you aware of the negative effect of obesity on psoriasis severity? [^]	Yes	63 (57.3)
	No	26 (23.6)
	Do not know	21 (19.1)
Are you aware of the negative effect of obesity on psoriasis treatment response? [^]	Yes	44 (40.0)
	No	22 (20.0)
	Do not know	44 (40.0)
Do you want to lose excess weight?	Yes	108 (94.7)
	No	4 (3.5)
	Do not know	2 (1.8)
How much do you want to lose excess weight? [^]		7.8 ± 2.5*
Why do you want to lose excess weight? [^]		
To be healthier		8.2 ± 2.2*
To be accepted		5.2 ± 3.0*
To like myself more		6.4 ± 2.8*
Are you interested in participating in a weight-loss program with a nutritionist?	Yes	96 (85.7)
	No	10 (8.9)
	Do not know	6 (5.4)
How much are you interested in participating in a weight-loss program with a nutritionist? [^]		7.1 ± 2.8*

^{^^}2 missing answers

[^] in a scale from 0 to 10; * mean ± standard deviation