
Latex Allergy and Occupational Exposure: The Patient's Perspective

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Natural rubber latex (NRL) allergy affects 0.3% to 1% of the general population [1], and its prevalence is higher among health care workers (range, 2.8%-17%) [2,3].

In sensitized patients, exposure to NRL proteins can provoke a type I IgE-mediated hypersensitivity reaction involving various organs and systems and a type IV reaction responsible for contact dermatitis [2,3]. Clinical manifestations, which occur within a few minutes after contact with NRL proteins, include urticaria, angioedema, conjunctivitis, allergic rhinitis, asthma, and anaphylaxis [4].

Unlike other allergic diseases, where patient-reported outcomes (PROs) are increasingly investigated, few data are available on the impact of latex allergy on the patient's experience.

Nienhaus et al [5] explored the effect of specific interventions for patients with occupational allergy and found that, when contact with NRL is avoided, health-related quality of life (HRQOL) and work activity improve.

Similar results were found by Power et al [6], who detected an improvement in HRQOL in 39 health care workers with latex allergy after avoidance of latex exposure.

Lewis-Jones et al [7,8] developed a specific HRQOL questionnaire for latex allergy and showed that this condition has a profound effect on both patients and caregivers. The tool was also validated in Spanish, although it has not yet been used to explore HRQOL in these patients [1].

The aim of our study was to add to current knowledge about patients' experience of latex allergy resulting from occupational exposure. In particular, we were interested in testing the following:

Table. Comparison of Psychological General Well-Being Index Scores of Patients With and Without Occupational Allergy and an Italian Normative Sample

		Mean (SD)	Mean (SD), Normative Sample	t (df)	P Value
Anxiety	Occupational latex allergy	15.32 (5.17)	17.30 (4.96)	-2.16	.04
	Nonoccupational latex allergy	15.63 (5.47)		-2.03	.048
Depressed mood	Occupational latex allergy	11.50 (2.56)	12.40 (2.62)	-2.16	.037
	Nonoccupational latex allergy	11.46 (2.86)		-2.49	.016
Positive well-being	Occupational latex allergy	10.74 (3.44)	11.80 (4.02)	-2.08	.044
	Nonoccupational latex allergy	11.02 (3.96)		-1.68	.98
Self-control	Occupational latex allergy	11.10 (2.78)	11.80 (2.69)	-2.21	.034
	Nonoccupational latex allergy	11.42 (2.72)		-1.88	.065
General Health	Occupational latex allergy	10.05 (2.52)	11.10 (3.07)	-3.53	.001
	Nonoccupational latex allergy	10.26 (2.58)		-3.61	.001
Vitality	Occupational latex allergy	12.21 (3.01)	13.40 (4.00)	-3.26	.002
	Nonoccupational latex allergy	11.95 (4.18)		-3.35	.002

- Whether patients with occupational latex allergy differ from those with nonoccupational allergy in terms of HRQOL, well-being, perception of illness, and coping strategies.
- Whether the well-being of patients with occupational or nonoccupational latex allergy is different from that of the general population.

This cross-sectional, observational study was performed on a population of patients aged ≥ 18 years diagnosed with latex allergy between 2014 and 2016. Patients experienced an immediate reaction after latex exposure and reported a positive result in a skin prick test and/or serum sIgE determination against latex.

The study consisted of the self-completion of PRO instruments after the clinical assessment at a single visit.

Once written informed consent was obtained, patients were invited to complete a specific questionnaire to assess HRQOL, namely, the Dermatology Life Quality Index (DLQI) [9] and other instruments widely used to assess PROs in allergic diseases (10): Psychological General Well-Being Index (PGWBI), Illness Perception Questionnaire (IPQ-R), and Coping Orientations to Problem Experienced (COPE).

A descriptive analysis was performed. One-sample and 2-sample *t* tests were used to compare means. Analyses were performed using IBM SPSS version 20.0.

A total of 115 eligible patients were invited to participate; 15 refused and 100 completed the questionnaires. Five patients were excluded owing to missing data about their job. A total of 95 patients (79 women, mean age 40.03 [10.31]) were considered for analysis. In 38 patients, latex allergy was related to work.

The burden of disease in HRQOL was relevant in both groups: patients with nonoccupational latex allergy had significantly higher scores in DLQI than those with occupational latex allergy (18.13 vs 20.21, $P=.027$). No significant differences were found between the 2 groups in terms of psychological well-being, perception of illness, and coping strategies. The Table shows the comparison of PGWBI scores for patients with and without occupational allergy and an Italian normative sample.

Our study was carried out in a large sample of patients diagnosed with latex allergy and referred by their allergists. The mean DLQI scores of both groups indicate that skin problems due to latex allergy have a marked effect on patients' HRQOL. Our data confirm the results of a previous study in health care workers [5]. Interestingly, the impact on HRQOL was higher in patients with nonoccupational latex allergy, suggesting that, from a subjective viewpoint, the consequences of disease go beyond the workplace. It is possible to hypothesize that, whereas procedures and protocols are available for health professionals and workers, it is difficult to prevent contact with latex in daily life.

Apart from HRQOL, the patient's perspective about latex does not differ between individuals with and without occupational exposure. The use of validated PROs has shown how the impact of disease on psychological well-being, the perception of illness, and the strategies that the patient uses to deal with it, are similar in both groups. These results suggest that the subjective component should be carefully evaluated in all patients, and not only in those with an occupational disease.

The use of a generic measure (PGWBI) enabled us to detect how patients' general psychological well-being is affected. When compared with the reference sample, both patients with occupational and nonoccupational latex allergy show a significantly higher level of anxiety and depression and significantly lower scores in positive well-being. The presence of the disease seems to interfere with all the dimensions of the patient's mood, thus increasing his/her distress. Moreover, patients with occupational allergy report a significant reduction in their level of self-control, probably due to the difficulties and changes they experience in their professional activity.

Our results should be interpreted with caution, given that our study was conducted in a single center with a limited number of patients and its cross-sectional nature does not enable us to draw causal inferences.

In conclusion, our study highlights how latex allergy interferes with HRQOL and significantly reduces well-being compared with a reference sample. Compared with patients with nonoccupational allergy, those with occupational allergy had a better HRQOL and similar scores in well-being,

perception of illness, and coping. However, their level of self-control was significantly lower than in the reference sample.

The evaluation of the individual perspective can provide useful information for designing individualized management plans for better care of patients with latex allergy.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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