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REVIEW ARTICLE

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# Psoriasis treatment training in dermatology residency: a Latin American survey of faculty and residents

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**ABSTRACT**

**Objective:** This study evaluated psoriasis treatment teaching in dermatology residency programs across Latin America (LATAM).

**Methods:** A Spanish/Portuguese survey was distributed to directors of dermatology departments/training programs and their residents in several LATAM countries between November 29, 2022, and March 31, 2023.

**Results:** A total of 108 individuals responded (59 directors and 49 residents) from eight countries: Argentina (2.8%), Brazil (41.7%), Chile (25.0%), Colombia (7.4%), Guatemala (1.9%), Mexico (1.9%), Paraguay (4.6%), and Peru (14.8%). Most directors reported that residents received training in complex medical dermatology (89.8%), immunodermatology (66.1%), and phototherapy (78%). Most residents reported familiarity with national guidelines (81.6%) and adherence to local guidelines (85.7%). In Brazil, 91% of programs had at least seven faculty members, 97% required national specialization exams, and 91% treated more than 31 psoriasis patients per week, compared with 48%, 36%, and 67% in other LATAM countries, respectively. Additionally, 47% of centers in Brazil reported that at least 26% of psoriasis patients received biological therapy, compared with only 8% in other LATAM countries.

**Conclusion:** Dermatology residents in LATAM are trained in complex dermatology, immunodermatology, and phototherapy and national psoriasis guidelines. Variation exists in patient volume and biologics use. A focus on improving residents' psoriasis training throughout LATAM is needed.

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**KEYWORDS**
Psoriasis; resident; Latin America; dermatology residency; immunodermatology; psoriatic arthritis; phototherapy; biologics

## Introduction

Psoriasis, a common chronic multisystem inflammatory disease, has experienced remarkable advances in pathophysiological understanding in recent years, leading to major therapeutic breakthroughs *via* development of safer and more effective medications (1). In addition to its cutaneous manifestations, psoriasis profoundly affects patients' quality of life, influencing social relationships, psychological well-being, and daily activities (2). Its disabling nature rivals the functional burden of other chronic diseases, including cardiovascular disease, diabetes mellitus, renal failure, liver disease, cancer, and visual impairment (3–4).

Dermatologists play a central role in psoriasis management, frequently serving as the primary point of contact for patients and as coordinators of multidisciplinary care. Consequently, adequate training during medical residency is essential to ensure high-quality care in the diagnosis and treatment of psoriasis and its associated comorbidities (5).

Teaching psoriasis management in residency programs presents particular challenges within Latin American (LATAM) countries, where diverse cultural, geopolitical, and socioeconomic factors shape medical education (6). Elements such as the organization of outpatient clinics, access to classical systemic and biologic therapies, scientific output, and training duration warrant close attention to understand their impact on educational practices.

This survey investigated the complexities of teaching psoriasis management to dermatology residents in LATAM. It aimed to emphasize clinical nuances and address the challenges imposed by the region's socioeconomic context. To achieve this objective, dermatology program directors and residents across LATAM participated in a survey designed to capture the diversity of dermatological education and clinical practice within the region.

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## Materials and methods

The International Psoriasis Council (IPC) is a global organization dedicated to improving the health and well-being of individuals with psoriasis and related diseases through education, research, and advocacy. The IPC is governed by a volunteer board of directors, composed of leading international experts in psoriasis, along with professionals who contribute business expertise.

The IPC designed and conducted this cross-sectional study using structured surveys consisting of 24 questions for directors and 16 for residents. Surveys, available in Spanish and Portuguese, were distributed to directors of dermatology departments and residency programs, along with their residents, in those countries with an IPC representative. LATAM countries (Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Paraguay, and Peru). Distribution occurred in two rounds: November 29 to February 2, 2023, and March 1 to March 31, 2023.

The Scientific Ethics Committee of the National Children's Hospital, Costa Rica, determined that this study qualified as a 'survey' study and did not require evaluation by a scientific ethics committee because it did not meet the definition of 'biomedical research' under the Biomedical Research Regulatory Law No. 9234 and the Caja Costarricense de Seguro Social. Participants from each country were identified based on input from IPC Councilors and Fellows. Invitations and surveys were distributed by email, accompanied by a cover letter describing the purpose of the study and confirming that participation would be voluntary and anonymous. All of the participants provided informed consent.

## Results

### *Demographics of the surveilled directors and residents included*

In total, 164 directors were invited to participate and were asked to forward the survey to their residents. Fifty-nine directors responded (response rate: 36.0%), along with 49 residents, yielding 108 responses in total from eight LATAM countries (Figure 1): Argentina (3 responses, 2.8%), Brazil (45 responses, 41.7%), Chile (27 responses, 25.0%), Colombia (8 responses, 7.4%), Guatemala (2 responses, 1.9%), Mexico (2 responses, 1.9%), Paraguay (5 responses, 4.6%), and Peru (16 responses, 14.8%). Of these responses, 63 responses (58.3%) were from Spanish-speaking countries, whereas 45 (41.7%) were from Brazil, the only Portuguese-speaking country included (Figure 1). In Brazil, fewer responses were from residents ($n=11$) than from directors ($n=34$).

### *Program structure and training*

Substantial differences in faculty size were observed between Brazilian residency programs and those in other LATAM countries.


**Figure 1.** Country-specific representation of questionnaire respondents.
Respondents to questionnaire (n directors, n residents).

In Brazil, 91.2% of programs had at least seven professors, compared with 48.0% in other countries. Conversely, 20.0% of programs outside Brazil operated with only one to three professors (Table 1).

Most LATAM residency programs reported undergoing some form of audit (83.1%), with similar rates in Brazil (85.3%) and other countries (80.0%). An important difference was noted in the administration of national examinations. In Brazil, 97.1% of residents were required to take a national exam, compared with 36.0% of residents in other LATAM countries (Table 1).

The most frequently used teaching methods in LATAM included participation in large meetings, lectures or classes, and review of scientific journals. Clinical rounds, medical record reviews, and small conferences were the least frequently used methods (Table 1). With regard to psoriasis-relevant dermatology training, directors reported that residents were exposed to complex medical dermatology (89.8%), immunodermatology (66.1%), and phototherapy (78.0%, Table 1).

### *Psoriasis management*

In Brazil, 58.8% of centers treated more than 31 psoriasis patients per week, and 91.2% had outpatient clinics dedicated to psoriasis; 67.6% of residents treated more than 45 patients per year. In other LATAM countries, the corresponding values were 16.0% of centers treating more than 31 psoriasis patients per week, 72.0% having outpatient

**Table 1.** Director questionnaire responses.

| Questions | Total, *n* (%) | | Brazil/ Portuguese-speaking country, *n* | Spanish-Speaking countries, *n* | Argentina, *n* | Chile, *n* | Colombia, *n* | Guatemala, *n* | Mexico, *n* | Paraguay, *n* | Peru, *n* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Organization/institution | | | | | | | | | | | |
| Private practice | 6 (10.2) | 10.2% | 2 | 4 | 1 | 1 | 2 | | | | |
| General Hospital | 17 (28.8) | 28.8% | 8 | 9 | | | | | 1 | 1 | 7 |
| University Hospital | 36 (61.0) | 61.0% | 24 | 12 | 2 | 2 | 2 | 1 | 1 | 1 | 3 |
| Dermatology program duration (years) | | | | | | | | | | | |
| 2Y | 0 | 0.0% | 0 | 0 | | | | | | | |
| 3Y | 52 (88.1) | 88.1% | 31 | 21 | 3 | 3 | 4 | 1 | 1 | 2 | 7 |
| 4Y | 3 (5.1) | % | 0 | 3 | | | | | 1 | | 2 |
| 5Y | 4 (6.8) | 6.8% | 3 | 1 | | | | | | | 1 |
| Preceptors/teachers in the program | | | | | | | | | | | |
| 1–3 | 5 | 8.5% | 0 | 5 | 1 | | | | 1 | | 3 |
| 4–6 | 11 | 18.6% | 3 | 8 | 2 | | | | | 1 | 5 |
| 7–10 | 15 | 25.4% | 12 | 3 | | | 2 | | | | 1 |
| >10 | 28 | 47.5% | 19 | 9 | | 3 | 2 | 1 | 1 | 1 | 1 |
| Residents accepted yearly | | | | | | | | | | | |
| 1–10 | 55 | 93.2% | 32 | 23 | 3 | 2 | 4 | 1 | 2 | 2 | 9 |
| 11–20 | 4 | 6.8% | 2 | 2 | | 1 | | | | | 1 |
| 21–30 | 0 | 0.0% | 0 | 0 | | | | | | | |
| >30 | 0 | 0.0% | 0 | 0 | | | | | | | |
| External medical rotation | | | | | | | | | | | |
| Yes | 50 | 84.7% | 26 | 24 | 3 | 3 | 4 | 1 | 2 | 2 | 9 |
| No | 9 | 15.3% | 8 | 1 | | | | | | | 1 |
| Dermatology-based training areas | | | | | | | | | | | |
| General | 57 | 96.6% | 34 | 23 | 3 | 3 | 4 | 1 | 2 | 2 | 8 |
| Complex clinical | 53 | 89.8% | 33 | 20 | 3 | 3 | 4 | 1 | 2 | 2 | 5 |
| Pediatric | 51 | 86.4% | 32 | 19 | 2 | 3 | 4 | 1 | 2 | 2 | 5 |
| Derm-pharmacology | 25 | 42.4% | 14 | 11 | 2 | 1 | 3 | 1 | 1 | 2 | 1 |
| Inmuno-dermatology | 39 | 66.1% | 23 | 16 | 2 | 3 | 4 | 1 | 2 | 2 | 2 |
| Phototherapy | 46 | 78.0% | 29 | 17 | 3 | 3 | 4 | 1 | 2 | 1 | 3 |
| None | 0 | 0.0% | 0 | 0 | | | | | | | |
| Program/course audited | | | | | | | | | | | |
| Yes | 49 | 83.1% | 29 | 20 | 3 | 3 | 4 | 1 | 2 | 2 | 5 |
| No | 10 | 16.9% | 5 | 5 | | | | | | | 5 |
| National exam required | | | | | | | | | | | |
| Yes | 42 | 71.2% | 33 | 9 | 3 | | | | 2 | | 4 |
| No | 17 | 28.8% | 1 | 16 | | 3 | 4 | 1 | | 2 | 6 |
| Teaching methods | | | | | | | | | | | |
| Didactic classes | 54 | 91.5% | 34 | 20 | 2 | 3 | 4 | 1 | 2 | 2 | 6 |
| Conferences | 39 | 66.1% | 19 | 20 | 3 | 2 | 4 | 1 | 2 | 2 | 6 |
| Seminars | 48 | 81.4% | 30 | 18 | 1 | 3 | 4 | 1 | 2 | 2 | 5 |
| Live case/patient presentation | 52 | 88.1% | 31 | 21 | 2 | 2 | 4 | 1 | 2 | 2 | 8 |
| Clinical rounds | 48 | 81.4% | 28 | 20 | 2 | 2 | 4 | 1 | 2 | 2 | 7 |
| Medical record review | 44 | 74.6% | 24 | 20 | 3 | 1 | 3 | 1 | 2 | 2 | 8 |
| Training sessions between preceptors and residents (small groups) | 50 | 84.7% | 29 | 21 | 3 | 3 | 4 | | 1 | 2 | 8 |
| Review of articles/ books | 54 | 91.5% | 30 | 24 | 3 | 3 | 4 | 1 | 2 | 2 | 9 |

(*Continued*)

**Table 1.** Continued.

| Questions | Total, *n* (%) | | Brazil/ Portuguese-speaking country, *n* | Spanish-Speaking countries, *n* | Argentina, *n* | Chile, *n* | Colombia, *n* | Guatemala, *n* | Mexico, *n* | Paraguay, *n* | Peru, *n* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Attendance meetings (local/regional/national | 55 | 93.2% | 33 | 22 | 3 | 3 | 4 | 1 | 2 | 2 | 7 |
| None of the above | 0 | 0.0% | 0 | 0 | | | | | | | |
| Psoriasis-based outpatient consultation | | | | | | | | | | | |
| Yes | 49 | 83.1% | 31 | 18 | 3 | 3 | 1 | 1 | 2 | 2 | 6 |
| No | 8 | 13.6% | 1 | 7 | | | 3 | | | | 4 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |
| # Psoriatic treated weekly | | | | | | | | | | | |
| 0–15 | 15 | 25.4% | 7 | 8 | | | 2 | 1 | | 1 | 4 |
| 16–30 | 18 | 30.5% | 5 | 13 | 3 | 1 | 2 | | 1 | | 6 |
| 31–45 | 15 | 25.4% | 12 | 3 | | 1 | | | 1 | 1 | |
| >45 | 9 | 15.3% | 8 | 1 | | 1 | | | | | |
| Average psoriatic patients treated by residents yearly | | | | | | | | | | | |
| 0–15 | 14 | 23.7% | 2 | 12 | 2 | 1 | 2 | | | 2 | 5 |
| 16–30 | 10 | 16.9% | 2 | 8 | 1 | 1 | 1 | 1 | 2 | | 2 |
| 31–45 | 6 | 10.2% | 5 | 1 | | | 1 | | | | |
| >45 | 27 | 45.8% | 23 | 4 | | 1 | | | | | 3 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |
| % Psoriatic patients using systemics | | | | | | | | | | | |
| <10% | 3 | 5.1% | 0 | 3 | | | | | | | 3 |
| 10–25% | 12 | 20.3% | 5 | 7 | | 1 | 1 | | | 1 | 4 |
| 26–50% | 20 | 33.9% | 13 | 7 | 3 | 2 | 2 | | | | |
| 51–75% | 19 | 32.2% | 12 | 7 | | | 1 | | 2 | 1 | 3 |
| 76–100% | 3 | 5.1% | 2 | 1 | | | | 1 | | | |
| % Psoriatic patients using biologics | | | | | | | | | | | |
| <10% | 17 | 28.8% | 1 | 16 | 1 | 2 | 2 | 1 | 2 | 1 | 7 |
| 10–25% | 22 | 37.3% | 15 | 7 | 1 | 1 | 2 | | | 1 | 2 |
| 26–50% | 16 | 27.1% | 14 | 2 | 1 | | | | | | 1 |
| 51–75% | 4 | 6.8% | 2 | 2 | | | | | | | |
| 76–100% | 0 | 0.0% | 0 | 0 | | | | | | | |
| Hours dedicated to teaching psoriasis | | | | | | | | | | | |
| 0–15 | 17 | 28.8% | 9 | 8 | | 1 | 2 | | | | 5 |
| 16–30 | 20 | 33.9% | 8 | 12 | 2 | 2 | 2 | 1 | 2 | 1 | 2 |
| 31–45 | 6 | 10.2% | 4 | 2 | | | | | | | 2 |
| >45 | 14 | 23.7% | 11 | 3 | 1 | | | | | 1 | 1 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |
| Hospital conducts psoriasis clinical research | | | | | | | | | | | |
| Yes | 38 | 64.4% | 20 | 18 | 2 | 3 | 4 | 1 | 2 | 2 | 4 |
| No | 19 | 32.2% | 12 | 7 | 1 | | | | | | 6 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |
| Published ≥1 psoriasis article in the last 5 years (indexed journal) | | | | | | | | | | | |
| Yes | 36 | 61.0% | 24 | 12 | 2 | 3 | 2 | | 2 | 1 | 2 |
| No | 21 | 35.6% | 8 | 13 | 1 | | 2 | 1 | | 1 | 8 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |
| Residents trained to treat psoriatic arthritis | | | | | | | | | | | |
| Yes | 47 | 79.7% | 27 | 20 | 2 | 3 | 4 | 1 | 2 | 2 | 6 |
| No | 10 | 16.9% | 5 | 5 | 1 | | | | | | 4 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |
| Residency training combines dermatology with rheumatology in psoriatic arthritis care | | | | | | | | | | | |
| Yes | 28 | 47.4% | 15 | 13 | 1 | 3 | 3 | 1 | 2 | 1 | 2 |
| No | 29 | 49.2% | 17 | 12 | 2 | | 1 | | | 1 | 8 |
| NR | 2 | 3.4% | 2 | 0 | | | | | | | |

NR: No response.

clinics dedicated to psoriasis, and 16.0% of residents treating more than 45 patients per year, respectively. Specifically, centers in Chile (2), Mexico (1), and Paraguay (1) managed more than 31 patients per week. In Chile (1) and Peru (3), residents treated more than 45 patients per year (Table 1). Residents most frequently assessed psoriasis severity using the Psoriasis Area and Severity Index (PASI, 97.96%) and the Dermatology Life Quality Index (DLQI, 81.63%, Table 2).

Among Brazilian centers, 47.0% administered biologic therapy to at least 26% of their psoriasis patients; 5.8% of centers administered such therapy to more than 50% of patients. In contrast, only 8.0% of centers in other LATAM countries provided biologics to 26% of their patients; none administered biologics to more than 50% of patients. Two programs, in Argentina and Peru, administered biologics to 26–50% of their patients (Table 1). All residents indicated access to systemic therapy, demonstrating the overall availability of psoriasis treatment in LATAM (Table 3). However, 6.1% of residents in Chile and Peru reported lack of access to biologics (Table 4). Despite this limitation, biologic therapy was more widely accessible than phototherapy in these countries. Most residents felt comfortable prescribing methotrexate, cyclosporine, or acitretin; more than half also reported confidence in prescribing biologics (Table 5).

**Table 2.** Tools used to assess psoriasis severity.

| | Total (49) | | Brazil/ Portuguese-speaking country (11) | | Spanish-speaking countries (38) | | Chile (24) | | Colombia (4) | | Guatemala (1) | | Paraguay (3) | | Peru (6) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tools | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Psoriasis Area and Severity Index (PASI) | 48 | 98.0% | 11 | 100.0% | 37 | 97.4% | 23 | 95.8% | 4 | 100.0% | 1 | 100.0% | 3 | 100.0% | 6 | 100.0% |
| Body Surface Area (BSA) | 37 | 75.5% | 9 | 81.8% | 28 | 73.7% | 18 | 75.0% | 3 | 75.0% | 1 | 100.0% | 2 | 66.7% | 4 | 66.7% |
| Physician Global Assessment (PGA) | 11 | 22.4% | 3 | 27.3% | 8 | 21.1% | 4 | 16.7% | 1 | 25.0% | 1 | 100.0% | | | 2 | 33.3% |
| Dermatology Life Quality Index (DLQI) | 40 | 81.6% | 11 | 100.0% | 29 | 76.3% | 17 | 70.8% | 3 | 75.0% | 1 | 100.0% | 3 | 100.0% | 5 | 83.3% |
| 36-Item Short Form Health Survey (SF36) | 1 | 2.0% | 0 | 0.0% | 1 | 2.6% | | | | | | | | | 1 | 16.7% |
| EuroQol Five-Dimensional (EQ5D) | 1 | 2.0% | 0 | 0.0% | 1 | 2.6% | | | | | | | | | 1 | 16.7% |
| Other | 1 | 2.0% | 0 | 0.0% | 1 | 2.6% | 1 | 4.2% | | | | | | | | |

**Table 3.** Comfort level of residents in prescribing specific psoriasis therapies, stratified by country.

| | Systemics | | | | Biologics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Country | Methotrexate | Cyclosporine | Acitretin | Apremilast | Anti-TNF | Anti IL17 | Anti IL12/23 | Anti IL23 | Phototherapy |
| Brazil | 100% | 82% | 100% | NA | 91% | 100% | 100% | 100% | 82% |
| Chile | 100% | 79% | 42% | 4% | 63% | 38% | 29% | 29% | 83% |
| Colombia | 100% | 100% | 100% | 25% | 75% | 100% | 75% | 100% | 100% |
| Guatemala | 100% | 100% | NA | NA | 100% | 100% | NA | NA | NA |
| Paraguay | 100% | 67% | 33% | NA | 100% | 33% | NA | 33% | 67% |
| Peru | 100% | 83% | 100% | NA | 83% | 83% | 67% | 67% | 67% |
| All | 100% | 82% | 65% | 4% | 76% | 63% | 51% | 55% | 80% |

NA: Not available.

**Table 4.** Resident questionnaire responses.

| | Total | | Brazil/ Portuguese-speaking country | Spanish-speaking countries | Chile | Colombia | Guatemala | Paraguay | Peru |
|---|---|---|---|---|---|---|---|---|---|
| Questions | N | % | N | N | N | N | N | N | N |
| Treat patients with systemics | | | | | | | | | |
| Yes | 49 | 100.0% | 11 | 38 | 24 | 4 | 1 | 3 | 6 |
| No | 0 | 0.0% | 0 | 0 | | | | | |
| Treat patients with biologics | | | | | | | | | |
| Yes | 46 | 93.9% | 11 | 35 | 22 | 4 | 1 | 3 | 5 |
| No | 3 | 6.1% | 0 | 3 | 2 | | | | 1 |
| Phototherapy unit available | | | | | | | | | |
| Yes | 42 | 85.7% | 10 | 32 | 24 | 3 | | 2 | 3 |
| No | 7 | 14.3% | 1 | 6 | 0 | 1 | 1 | 1 | 3 |
| Know psoriasis national guidelines | | | | | | | | | |
| Yes | 40 | 81.6% | 11 | 29 | 18 | 4 | 1 | 3 | 3 |
| No | 2 | 4.1% | 0 | 2 | 2 | | | | |
| No guidelines available | 4 | 8.2% | 0 | 4 | 1 | | | | 3 |
| Does not know | 3 | 6.1% | 0 | 3 | 3 | | | | |
| Follow local psoriasis treatment guidelines | | | | | | | | | |
| Yes | 42 | 85.7% | 11 | 31 | 20 | 4 | 1 | 3 | 3 |
| No | 2 | 4.1% | 0 | 2 | 2 | | | | |
| No guidelines available | 5 | 10.2% | 0 | 5 | 2 | | | | 3 |

**Table 5.** Treatments available for psoriasis in LATAM.

| | Total (49) | | Brazil/ Portuguese-speaking country (11) | | Spanish-speaking countries (38) | | Chile (24) | | Colombia (4) | | Guatemala (1) | | Paraguay (3) | | Peru (6) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Questions | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Biologic | | | | | | | | | | | | | | | | |
| Yes | 46 | 93.9% | 11 | 100.0% | 35 | 92.1% | 22 | 91.7% | 4 | 100.0% | 1 | 100.0% | 3 | 100.0% | 5 | 83.3% |
| No | 3 | 6.1% | 0 | 0.0% | 3 | 7.9% | 2 | 8.3% | | | | | | | 1 | 16.7% |
| Phototherapy | | | | | | | | | | | | | | | | |
| Yes | 42 | 85.7% | 10 | 90.9% | 32 | 84.2% | 24 | 100.0% | 3 | 75.0% | | | 2 | 66.7% | 3 | 50.0% |
| No | 7 | 14.3% | 1 | 9.1% | 6 | 15.8% | | | 1 | 25.0% | 1 | 100.0% | 1 | 33.3% | 3 | 50.0% |

Regarding clinical research, 58.8% of Brazilian centers and 72.0% of centers in other LATAM countries conducted investigations involving psoriasis. However, clinicians in 70.6% of Brazilian centers had published at least one psoriasis-related article in an indexed journal within the past 5 years, compared with 48.0% in other countries (Table 1). Most programs provided 16–30 h of psoriasis-specific education annually (33.9%); the next largest proportion provided 0–15 h of such education each year (28.8%). A smaller proportion (23.7%) provided more than 45 h per year (Table 1).

Most residents (81.6%) were familiar with national psoriasis guidelines; 4.1% reported unfamiliarity and 6.1% expressed uncertainty. Similarly, 85.7% confirmed adherence to local guidelines, whereas 4.1% reported non-adherence. A minority indicated that no national guidelines were available (8.2%) or that they were unaware of such guidelines (6.1%) (Table 4). Some responses appeared inconsistent because residents from the same country provided conflicting statements—some reported adherence to local guidelines, whereas others indicated that such guidelines did not exist.

## Discussion

Latin American countries have a diversity in healthcare systems and access to care. Brazil has the largest population and public healthcare system. The observations in this survey reflect these disparities and, at the same time, help to strive for harmonization. The diversity of approaches to teaching and managing psoriasis in dermatology residency programs across LATAM is reflected in faculty size, administration of national examinations, availability of outpatient clinics dedicated to psoriasis, patient volume per resident, access to biologics, exposure to research, and hours of formal psoriasis education.

Several similarities were observed in teaching methods across LATAM countries, including the clinical tools used to evaluate psoriasis patients. However, while certain characteristics are shared, the region's heterogeneity reveals distinct features among participating nations. Variations in faculty numbers, the existence of specialized outpatient clinics, the implementation of national examinations, and accessibility to biologic therapies represent prominent points of divergence, particularly between Brazil and other countries. The large Brazilian population likely contributes to the higher patient volume and greater number of specialized outpatient clinics. Additionally, national examinations for dermatology residents are widely implemented in Brazil, in contrast to other LATAM countries, suggesting differing standards of professional assessment and certification.

The greater use and availability of biologics in Brazil is attributed to differences in access rather than medical criteria. Since 2019, the Brazilian government has provided nationwide access to biologics for psoriasis, and since 2010 for psoriatic arthritis, a policy not utilized in other LATAM countries (7). This availability may have contributed to the higher level of confidence among Brazilian residents in prescribing these agents.

These findings underscore the influence of socioeconomic complexities on budgetary policies, which directly affect public health. Restrictions on treatment access highlight the importance of integrated strategies that address regional differences to promote equity in dermatologic care. Notably, residents who reported less confidence in prescribing certain biologic classes—such as anti-interleukin (IL)–17, anti-IL-12/23, and anti-IL-23—were mainly from countries with limited access and constrained government funding for these therapies. Nevertheless, the high level of resident awareness and reported adherence to local psoriasis guidelines across LATAM is encouraging.

Interestingly, the discrepancy between participation in clinical research and publication output may have resulted from differing interpretations of the term 'research.' Some respondents may have assumed it exclusively referred to sponsored clinical trials, whereas others may have understood it to include case reports, case series, and other observational studies. Another factor to consider is the variation in program priorities across LATAM regions. Some programs may emphasize both research and clinical practice; others may primarily focus on clinical training. Regardless, scientific output on psoriasis remains limited in many LATAM centers. Therefore, it is essential to promote research and knowledge dissemination in this field. Increased scientific production would contribute to a more comprehensive understanding of regional characteristics of psoriasis, improve care practices, and enhance LATAM's global representation. Dissemination of relevant clinical findings to regional dermatologists would also foster the development of updated care models tailored to specific needs of patients with psoriasis.

A main limitation of this study is the relatively low number of responses from directors and residents, which may have biased the results toward countries with higher participation, particularly Brazil and Chile. Potential reasons for the lower response rate among residents may involve lack of interest or insufficient encouragement from program directors.

Another limitation is that the definition of research may vary between centers. However, the definition of research by IPC is broad and comprises the full spectrum of basic research, translational research, and clinical research. An additional limitation is that the survey has collected the overall responses of the residents and directors. In a future questionnaire, additional questions will be addressed to better understand the validity and the root-cause relations. And finally, sampling was limited to 8 LATAM countries, reducing generalizability.

In conclusion, this IPC survey demonstrated that residency training in LATAM includes complex dermatology, immunodermatology, and photodermatology education; provides residents with experience in psoriasis management; and ensures familiarity with national guidelines and adherence to local recommendations. However, the survey highlights disparities and opportunities for improvement in resident

training, including national examination requirements, faculty exposure, clinical experience in psoriasis management, and access to innovative therapies. These results offer an important model for strengthening dermatology residency training involving psoriasis, with potential applicability to programs in other regions worldwide.

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## Authors' contributions

Andre VE Carvalho, Lucas Galimany, Leandro Leite, Ricardo Romiti, Peter van de Kerkhof, and Fernando Valenzuela contributed to research design. Lucas Galimany, Leandro Leite, Natalia Merino-Senekowitsch, Daniela Armijo, Jaquelini Barboza da Silva, Claudia Romina Contreras, and Fernando Valenzuela assisted with data collection. Andre VE Carvalho, Lucas Galimany, Leandro Leite, Claudia de la Cruz, Ricardo Romiti, and Margarita Maria Velásquez-Lopera conducted data analysis. Lucas Galimany, Leandro Leite, Natalia Merino-Senekowitsch, Peter van de Kerkhof, Fernando Valenzuela, and Matias Maskin drafted the manuscript. All authors reviewed and approved the final version of the manuscript.

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Andre VE Carvalho has served as an advisor, received speaking fees, and/or participated in clinical trials sponsored by AbbVie, Amgen, Boehringer Ingelheim, Bristol Myers Squibb, Eli Lilly, GlaxoSmithKline, Janssen, LEO Pharma, Novartis, Pfizer, Sanofi, Sun Pharma, and UCB. Lucas Galimany has served as an advisor for Bristol Myers Squibb. Leandro Leite has served as an advisor and/or received speaking fees from AbbVie, Eli Lilly, Janssen-Cilag, Novartis, and Sanofi. Daniela Armijo has served as an advisor, received speaking fees, and/or participated in clinical trials sponsored by AbbVie, Sanofi, Bristol Myers Squibb, LEO Pharma, Amgen, Eli Lilly, Janssen-Cilag, Novartis, and Pfizer. Jaquelini Barboza da Silva has served as an advisor, received speaking fees, and/or participated in clinical trials sponsored by AbbVie, Eli Lilly, Janssen-Cilag, Novartis, Pfizer, Boehringer Ingelheim, and Sanofi. Claudia de La Cruz has served as an advisor, received conference fees, and/or participated in clinical trials sponsored by AbbVie, Amgen, Beiersdorf, Boehringer Ingelheim, Sanofi, Novartis, Bristol Myers Squibb, Pfizer, Merck Sharp & Dohme, Merck Healthcare KGaA, Genentech, Eli Lilly, Coherus, UCB, Priovant Therapeutics, Janssen, and Biogen MA Inc. Ricardo Romiti has served as a scientific consultant, speaker, or clinical study investigator for AbbVie, Boehringer Ingelheim, Bristol Myers Squibb, Galderma, Janssen-Cilag, Eli Lilly, LEO Pharma, Novartis, Pfizer, Sanofi, TEVA, and UCB. MM Velásquez-Lopera has served as an advisor and/or received speaking fees from AbbVie, Boehringer Ingelheim, Galderma, Janssen-Cilag, Novartis, Pfizer, and Sanofi, and has participated in clinical trials sponsored by Novartis. Cristina M Echeverría has served as an advisor, received speaking fees, and/or participated in clinical trials sponsored by AbbVie, Amgen, Eli Lilly, Janssen-Cilag, Novartis, Pfizer, Sanofi, RAFFO, Bristol Myers Squibb, and UCB Pharma. Matias Maskin has served on speaker advisory boards for L'Oréal, AbbVie, Eli Lilly, Adium, Sanofi, Pfizer, MSD, and Bristol Myers Squibb. Enrique Rivas has served as an advisor and/or received speaking fees from AbbVie, Eli Lilly, Novartis, and Sanofi. Fernando Valenzuela has served as an advisor, received speaking fees, and/or participated in clinical trials sponsored by AbbVie, Amgen, Eli Lilly, Janssen-Cilag, LEO Pharma, Novartis, Pfizer, and Sanofi.Natalia Merino-Senekowitsch, Benjamin Hidalgo-Matlock, Peter van de Kerkhof and Claudia Romina Contreras, declare no conflicts of interest.

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## Data availability statement

The data and materials supporting the results or analyses in this paper will be made available on reasonable request.

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