Characteristics of generalized pustular psoriasis (GPP) patients: results from the Optum® Clinformatics™ Data Mart database

Kotowsky N[1], Garry EM[2], Valdecantos WC[1], Gao R[1], Golembesky AK[3]

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Background

- Generalized pustular psoriasis (GPP) is defined as a rare, neutrophilic skin disease characterized by episodes of widespread eruption of sterile, macroscopically visible pustules that can occur with or without systemic inflammation and with or without plaque psoriasis[1–4]
- GPP is a chronic disease, causing substantial morbidity, and in some cases, mortality[5]
- Although GPP is a distinct entity from plaque psoriasis, phenotypically and genetically, patients receive similar treatments to patients with plaque psoriasis[1,2,6,7]
- Currently, there are no treatments for the specific indication of GPP in the USA or Europe, highlighting an unmet need in this patient population
- Despite the lack of treatment options for patients with GPP, therapies that are being used are associated with adverse events and/or variable efficacy, making them inappropriate for long-term use[2,8,9]
- To date, there is limited real-world evidence characterizing patients with GPP
- In order to better understand and evaluate the unmet needs of patients with GPP, this study aims to describe the US clinical burden and healthcare resource utilization (HCRU) of patients with GPP compared to those with plaque psoriasis and the general population

Methods

- Patients were diagnosed as having GPP or plaque psoriasis if they had ≥1 inpatient or 2 outpatient diagnostic claim(s) for ICD-10 L40.1 or L40.0, respectively, separated by 30–365 days
- All analyses were conducted via the Aetion Evidence Platform® v3.11, using Optum® Clinformatics™ Data Mart, a US administrative claims database[10]
- The study period was from October 1, 2015 to March 31, 2019, with the first qualifying diagnostic claim marking the index date (**Figure 1**)
- A cohort of the general population was matched to patients with GPP 4:1, based on age and sex, excluding subjects with any psoriasis other than psoriatic arthritis, and the GPP-matched cohort, along with the plaque psoriasis cohort, provided context to the GPP burden of disease
- Patient characteristics during the 180-day baseline period and medication use among patients with 12 months' follow-up were analyzed
- The following outcomes were evaluated:
  - Comorbidities during baseline, including but not limited to hormonal/metabolic conditions, pulmonary conditions, and psychiatric conditions, determined by ICD-10 diagnosis codes
  - Concomitant medications during baseline
  - Dermatology treatments received during the 12 months' follow-up
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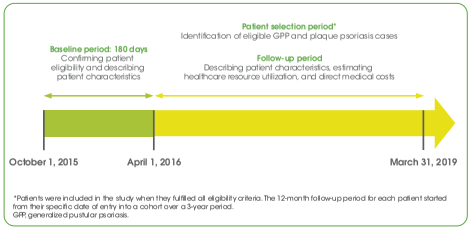
Figure 1. Study design



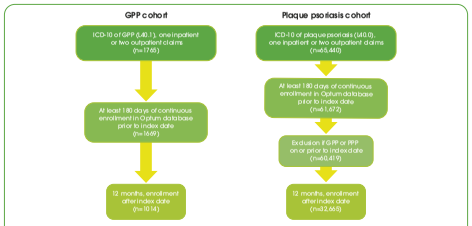
*Patients were included in the study when they fulfilled all eligibility criteria. The 12-month follow-up period for each patient started from their specific date of entry into a cohort over a 3-year period.
GPP, generalized pustular psoriasis.

Results

Patient population and demographics

- In total, 1,669 patients with GPP, 60,419 with plaque psoriasis, and 6676 in the GPP-matched cohort were identified at baseline. Overall, 1014 patients with GPP and 32,665 patients with plaque psoriasis completed the 12-month follow-up period (**Figure 2**)
  - In the GPP-matched cohort, 4130 subjects completed the 12-month follow-up
- Patients with GPP were more likely to be female (67.6%) and had a mean age of 63.9 years, compared with the plaque psoriasis cohort in which patients had a mean age of 56.4 years and 50.7% were female (**Table 1**)

Figure 2. Study population



GPP, generalized pustular psoriasis; ICD-10, International Classification of Diseases, 10th Revision; PPP, palmoplantar pustulosis.

Table 1. Patient demographics at baseline

Demographics, n (%)	GPP cohort (n=1669)	Plaque psoriasis cohort (n=60,419)	GPP-matched cohort* (n=6676)
Female	1128 (67.6)	30,621 (50.7)	4512 (67.6)
Age, years, mean (SD)	63.9 (15.2)	56.4 (17.3)	59.6 (19.9)
<18 years	17 (1.0)	1135 (1.9)	68 (1.0)
18–64 years	739 (44.3)	37,645 (62.3)	2956 (44.3)
≥65 years	913 (54.7)	21,637 (35.8)	3652 (54.7)
Commercially insured patients	580 (34.8)	37,774 (62.5)	3127 (46.8)
Medicare patients	1089 (65.2)	22,645 (37.5)	3549 (53.2)

*The GPP-matched cohort was matched 4:1, based on age and sex, to the GPP cohort.
GPP, generalized pustular psoriasis; SD, standard deviation.

Comorbidities

- At baseline, patients with GPP had more comorbidities than patients in the plaque psoriasis and GPP-matched cohorts
  - These included psoriatic arthritis (11.8% vs 7.0% and 0.1%, respectively), anxiety (11.6% vs 6.7% and 5.8%), and depression (10.7% vs 5.5% and 5.0%)
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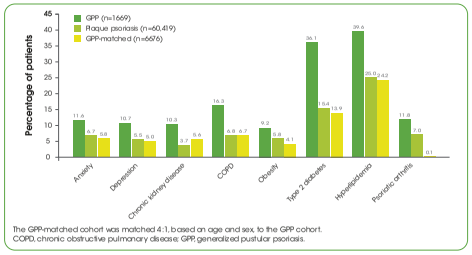

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COPD, chronic obstructive pulmonary disease; GPP, generalized pustular psoriasis.

Dermatologic medication use during the 12-month follow-up period

- 245 out of 1014 patients (24.2%) with GPP were treated with combination therapies (topical and/or biologics and/or non-biologics) compared with 11,365 out of 32,665 patients (34.8%) with plaque psoriasis (**Table 2**)
- Patients with GPP were more than twice as likely to be treated with a non-biologic systemic therapy only than patients with plaque psoriasis (15.0% vs 7.2%, respectively); however, the percentage of patients treated with a biologic monotherapy was higher in the plaque psoriasis cohort than in the GPP cohort (5.0% vs 9.6%)
  - Patients with GPP were also less likely to be treated with a topical medication only compared with patients with plaque psoriasis (14.4% vs 24.5%) (**Table 2**)
- Of the biologic therapies, tumor necrosis factor (TNF) inhibitors were the most commonly prescribed in the GPP and plaque psoriasis cohorts (**Figure 4**)
  - Adalimumab was the most commonly prescribed TNF inhibitor in the GPP (6.7%) and plaque psoriasis cohorts (11.2%)
- Of the non-biologic therapies, methotrexate was the most commonly used individual systemic therapy in the GPP (10.8%) and plaque psoriasis (10.0%) cohorts (**Figure 4**)

Table 2. Systemic, non-systemic, and topical medication drug use during the 12-month follow-up period on or after the qualifying claim date

Medication, n (%)	GPP cohort (n=1014)	Plaque psoriasis cohort (n=32,665)
No treatment	419 (41.3)	7782 (23.8)
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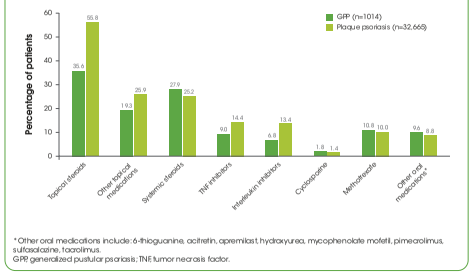

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GPP, generalized pustular psoriasis; TNF, tumor necrosis factor.

Concomitant medication use for comorbidities during the 12-month follow-up

- During the 12-month follow-up period, the use of concomitant medications for comorbidities was higher in patients with GPP than those with plaque psoriasis and the GPP-matched cohort
  - These include cardiovascular medication, type 2 diabetes medication, psychiatric medication, medication for respiratory conditions, and opioid pain medication (**Table 3**)

Table 3. Concomitant medication for comorbidities during the 12-month follow-up period

Medication, n (%)	GPP cohort (n=1014)	Plaque psoriasis cohort (n=32,665)	GPP-matched cohort* (n=4130)
Antihypertensives	649 (64.0)	15,299 (46.8)	1861 (45.1)
Antibiotics	537 (53.0)	16,251 (49.8)	1557 (37.7)
Statins	473 (46.6)	10,410 (31.9)	1265 (30.6)
Psychiatric medication	445 (43.9)	10,917 (33.4)	1089 (26.4)
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Discussion

- This study summarizes the characteristics of 1669 patients with GPP in a real-world setting in the USA
- These findings suggest that patients with GPP tend to have more comorbidities that require additional management than patients with plaque psoriasis and the general population cohort, including psoriatic arthritis, anxiety, and depression. This may also be explained by the higher mean age of GPP patients compared with plaque psoriasis
- The medication burden for both dermatological reasons and comorbidities was higher in patients with GPP compared with patients with plaque psoriasis, suggesting that there are higher healthcare needs in this patient population
- This study is not without limitations. As data were collected from an administrative claims database for reimbursement purposes, rather than scientific research, there may be miscoding, thus this should be considered during analyses
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References

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Acknowledgments

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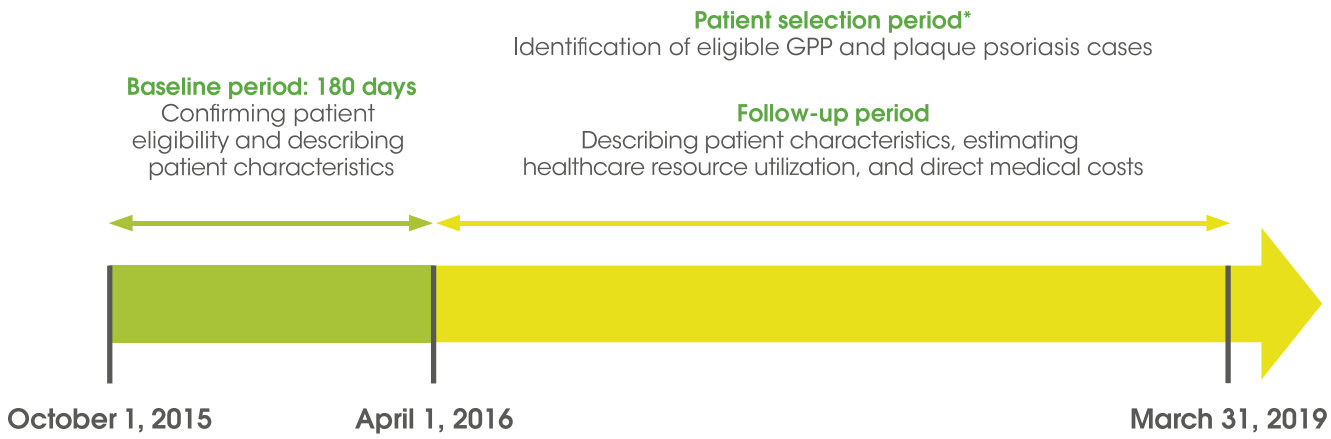

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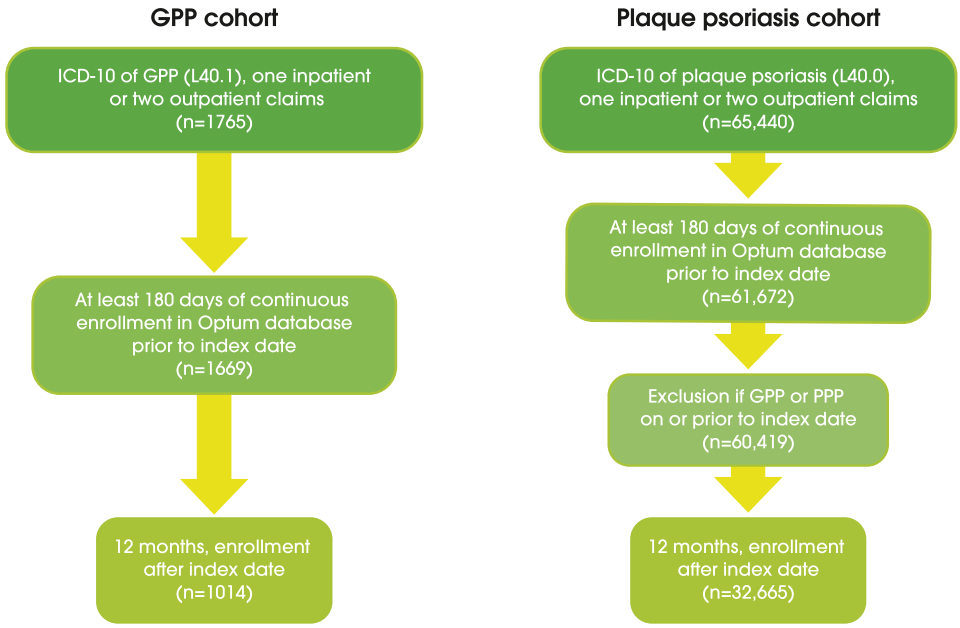

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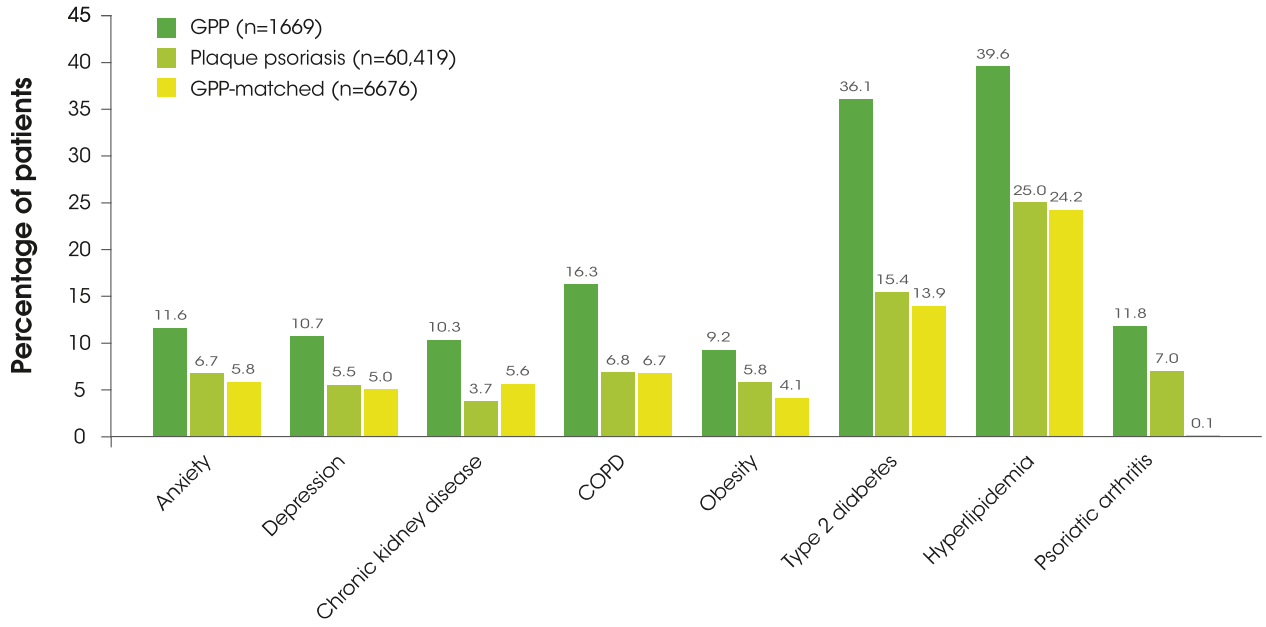

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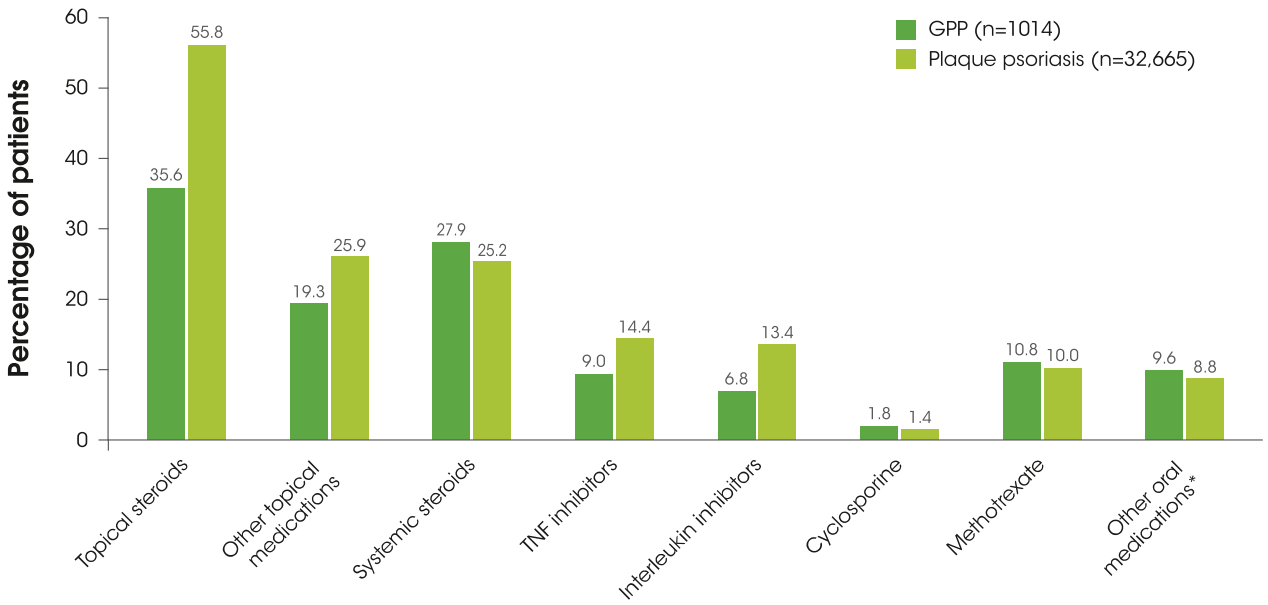

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