Healthcare Resource Utilization and Costs of Dermatomyositis and Polymyositis in the US: A Systematic Literature Review

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Background/Objectives

- Dermatomyositis (DM) and polymyositis (PM) are rare heterogenous systemic autoimmune disorders with primary targets of muscle and skin and can also impact multiple other organs. A systematic literature review (SLR) was conducted to identify published evidence on disease burden, treatment and unmet needs in DM/PM. The objective of the analysis was to summarize data on healthcare resource utilization (HCU) and the cost of treating DM/PM in the US.

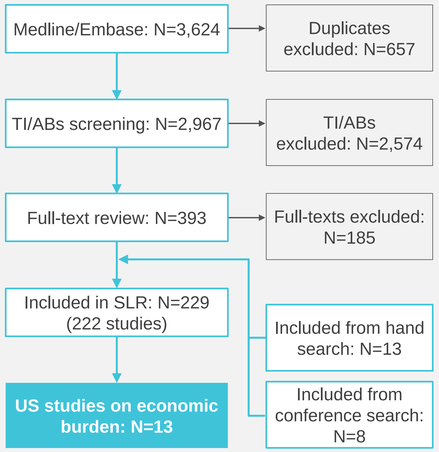
Methods

Study design	Systematic review of literature and qualitative synthesis of evidence
Data Sources	Medline, Embase, references of identified studies, American College of Rheumatology and North American Rheumatic Dermatology Society meeting abstracts (2018-2020)
Eligibility criteria	Primary studies of any design including ≥10 patients with adult- or juvenile-onset DM or PM
Relevant outcomes	Clinical burden, humanistic burden, economic burden, disease management and unmet needs
Limitations	Studies in humans, published in English between 2011-2021

Results

- A total of 3,624 records were retrieved from medical databases and 222 studies described in 229 papers were included in data abstraction (Figure 1).
- HCU and/or costs related to DM/PM in the US were reported in 13 studies[1-13].
- The majority of studies (69%) were retrospective analyses of administrative healthcare databases (National Inpatient Sample, National Readmission Database and MarketScan) covering different periods of data collection between 1993 and 2015.

Figure 1. PRISMA diagram



Results (cont'd)

- Patients with DM/PM had a significantly higher number of medical visits (57% directly related to DM/PM care), dermatologist visits (DM only), drug prescriptions and other medical visits, compared to propensity score-matched controls without DM/PM[1] or healthy population[2] (Table 1).

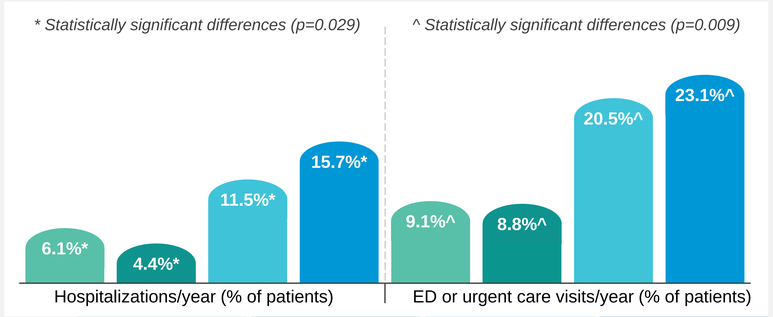
Table 1. HCU in DM/PM adults was significantly higher than in non-DM/PM controls

Outcome	DM/PM		Control		Mean HCU increase in DM/PM
	N	Mean	N	Mean	
Medical visits/year[1]	2,578	31	2,578*	23.6*	**+ 7.4** (p<0.001)
Prescriptions/year[1]	2,578	32.2	2,578*	27.5*	**+4.7** (p<0.001)
Dermatologist visits[2]**	103	7	152^	3^	**+4** (p<0.001)
Rheumatologist visits/year[1]	2,578	1.8	2,578*	0.6*	**+ 1.2** (p<0.001)
Inpatient admissions/year[1]	2,578	3.6	2,578*	2.5*	**+ 1.1** (p<0.001)
Physical therapist visits/year[1]	2,578	3.7	2,578*	2.6*	**+ 1.1** (p<0.001)
Neurologist visits/year[1]	2,578	0.8	2,578*	0.4*	**+ 0.4** (p<0.001)
ED visits/year[1]	2,578	0.8	2,578*	0.6*	**+ 0.2** (p<0.001)

* Propensity score matched control without DM/PM; median follow-up of 2.3 years for DM and 0.9 years for healthy control group; ^ Healthy control.

- Approximately 22% and 40% of DM/PM patients reported at least one hospitalization and ED visit due to any reason in the past year, respectively, with myositis-related HCU significantly increasing with disease flare frequency[8] (Figure 2).

Figure 2. Myositis-related HCU$ significantly increased with frequency of DM/PM flares (N=524)[8]



$ Self-reported by patients.

- When hospitalized, patients with DM/PM required more specialized tests and procedures[3] (Figure 3), typically with 1.05 to 1.88-day longer LOS[3-5], compared to non-DM/PM controls.
- The total annual cost of hospitalization due to DM was estimated at $49 million and $168 million for juvenile and adult patients, respectively, with a substantial cost increase to $644 million for hospitalizations due to comorbidities in adult patients[4,5] (Figure 4).
- Mean total hospital charges to payers were $55,774 per hospitalization, which was $13,531 higher relative to inpatients without DM/PM (p<0.01) (adjusted to 2014 USD)[3].

Results (cont'd)

- DM/PM decreased annual productivity by 2 days compared to matched controls (p<0.001)[1]. Adults reported myositis-impaired productivity for approximately 28% of workdays/past week on average, increasing to 42% in those reporting at least 4 flares in the past year (p<0.001)[8].

Figure 3. Hospitalized DM/PM adults required significantly more procedures than non-DM/PM controls[3]

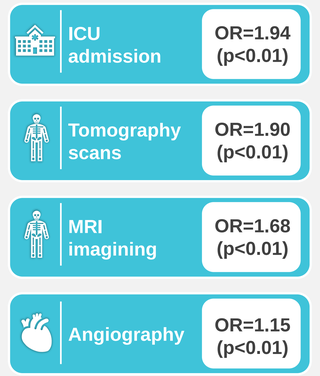
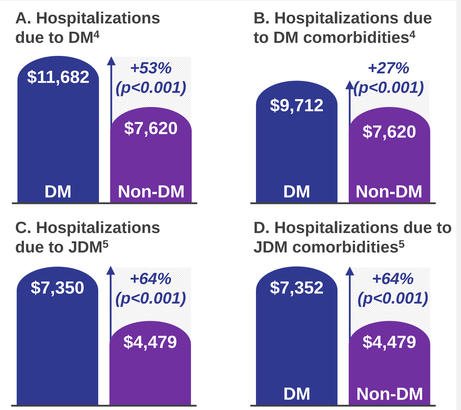


Figure 4. Mean DM hospitalization cost was 53-64% higher compared to non-DM/PM controls (USD 2014)



Conclusions

- **The evidence on the economic burden of DM/PM in the US suggests that adult- and juvenile-onset DM/PM generate significant costs to the healthcare system.**
- **Given the limited evidence on the HCU and associated costs of DM/PM in the US, additional research on this topic is warranted.**
- **The significant direct and indirect economic burden associated with the current treatment of DM/PM suggest that there is a need for safe and efficacious therapies.**

References

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Abbreviations: DM, dermatomyositis; ED, emergency department; HCU, Healthcare resource utilization; ICU, intensive care unit; JDM, juvenile dermatomyositis; LOS, length of stay; MRI, magnetic resonance imaging; OR, odds ratio; PM, polymyositis; SLR, systematic literature review; TI/Abs, title and abstracts.

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