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Association of Sociodemographic Characteristics and Healthcare Costs in Patients with Non-Obstructive Hypertrophic Cardiomyopathy

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INTRODUCTION

- Hypertrophic cardiomyopathy (HCM) is a chronic, myocardial disorder with substantial healthcare-related costs, especially when patients are symptomatic.
- No evidence exists on the impact of sociodemographic characteristics on costs of care for patients with nonobstructive HCM (nHCM).
- The objective of this study was to evaluate differences in 5-year cumulative costs in nHCM patients by sex, race/ethnicity, age, and region.

METHODS

Figure 1. Study design

Inclusion criteria

1. **Evidence of nHCM:** Patients with nHCM met the following selection criteria:
   - ≥2 medical claims with a diagnosis code for nHCM (ICD-9: 425.11 or 425.18; ICD-10: I42.2) in any care setting on different dates of service ≥30 days apart during the patient identification period.
2. At least 18 years of age as of the index date.
3. **Baseline enrollment:** Continuous enrollment (CE) with medical and pharmacy benefits for 6 months prior to the index date.
4. **Follow-up enrollment:** CE with medical and pharmacy benefits for ≥5 years after (and including) the index date.

Exclusion criteria

1. Patients with evidence of Fabry disease or amyloidosis during the study period.
2. Patients with missing age, sex, and unknown or "other" geographic region.
3. Medical claim of obstructive HCM (ICD-9: 425.1; ICD-10: I42.1).
4. Septal reduction therapy (alcohol septal ablation and septal myectomy) during the study period and pharmacotherapy (BBs, CCBs, disopyramide) during baseline period.

Outcomes

- HCM-related healthcare costs (Consumer Price Index adjusted to 2022) were reported as mean (SD), including medical (ambulatory: office visit, outpatient visits; emergency room visit, inpatient admissions, other medical costs) and pharmacy.
- Outcomes were assessed at 5-year follow-up (N=3652).

BB, beta-blocker; CCB, calcium channel blocker; HCM, hypertrophic cardiomyopathy; nHCM, nonobstructive hypertrophic cardiomyopathy.

- Retrospective cohort study.
- Adult patients with nHCM in Optum's Market Clarity database.
- From January 1, 2013, through December 31, 2021.
- Index date = first nHCM diagnosis.

RESULTS

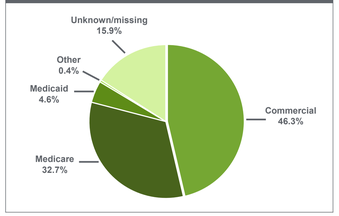
Patient Demographics

Table 1. Patient demographics

Demographics	Patient with nHCM N=3652
Age, continuous, mean (SD), years	63.0 (15.5)
Age group, years, n (%)	
18–39	308 (8.4)
40–54	681 (18.7)
55–64	777 (21.3)
65–74	873 (23.9)
75+	1013 (27.7)
Sex, n (%)	
Female	1666 (45.6)
Male	1986 (54.4)
US region, n (%)	
Northeast	1174 (32.1)
Midwest	1418 (38.8)
South	773 (21.2)
West	287 (7.9)
Race/ethnicity, n (%)	
White, non-Hispanic	2841 (77.8)
Black/African American, non-Hispanic	618 (16.9)
Asian, non-Hispanic	69 (1.9)
Hispanic	124 (3.4)

nHCM, nonobstructive hypertrophic cardiomyopathy.

Figure 2. Insurance payers

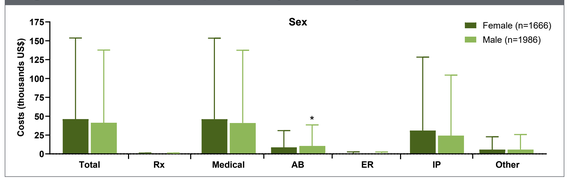


- Among 3652 patients with nHCM (**Table 1**):
  - 45.6% were female.
  - 77.8% were non-Hispanic White.
  - Mean age, 63.0 ± 15.5 years.
  - 46.3% had commercial insurance (**Figure 2**).

HCM-related Healthcare Costs by Socioeconomic Characteristics

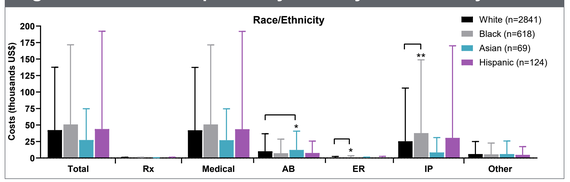
- **Sex:** Compared with female patients, males had higher annual ambulatory (AB) costs: $10,554 vs $8,689; *P*<0.05 (**Figure 3**).
- **Race/ethnicity:** Compared with White patients, Black patients had significantly higher emergency room (ER) costs ($743 vs $433; *P*<0.05) and inpatient admissions (IP) costs ($37,664 vs $25,356; *P*<0.01), whereas Asian patients had greater AB costs ($12,289 vs $10,291; *P*<0.05) annually (**Figure 4**).

Figure 3. Medical and pharmacy costs by sex



* *P*<0.05.
Data are presented as mean (SD) for healthcare costs (thousands US$, 2022).
Total includes medical and pharmacy costs. Medical includes AB, ER, IP, and other medical costs.
AB, ambulatory; ER, emergency room visits; IP, inpatient admissions; Rx, pharmacy.

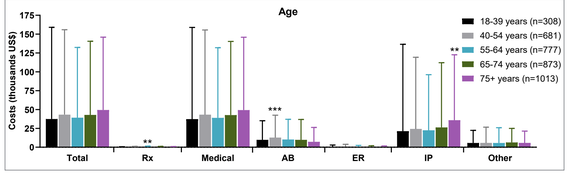
Figure 4. Medical and pharmacy costs by race/ethnicity



* *P*<0.05; ** *P*<0.01.
Data are presented as mean (SD) for healthcare costs (thousands US$, 2022).
Total includes medical and pharmacy costs. Medical includes AB, ER, IP, and other medical costs.
AB, ambulatory; ER, emergency room visits; IP, inpatient admissions; Rx, pharmacy.

- **Age:** Patients aged 55–64 years had the highest pharmacy costs ($297; *P*<0.01), patients aged 40–54 years the highest AB costs ($12,737; *P*<0.001), and patients aged 75+ years the highest IP costs ($35,859; *P*<0.01) annually (**Figure 5**).
- **US region:** Patients in the Midwest had the highest total ($49,194; *P*<0.05), medical ($48,986; *P*<0.05), ER ($660; *P*<0.001), and other medical costs ($7,184; *P*<0.001); highest AB costs were in the West ($11,773; *P*<0.01) annually (**Figure 6**).

Figure 5. Medical and pharmacy costs by age



** *P*<0.01; *** *P*<0.001.
Data are presented as mean (SD) for healthcare costs (thousands US$, 2022).
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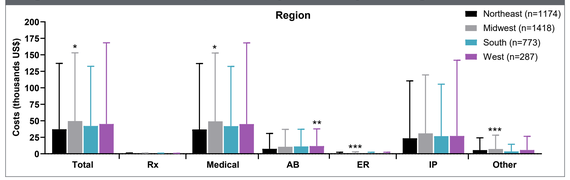
Figure 6. Medical and pharmacy costs by US region



* *P*< 0.05; ** *P*<0.01; *** *P*<0.001.
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Limitations

- Real-world data in this study utilized ICD-9 and ICD-10 coding for disease identification, patient demographics, and outcomes, and may be subject to inconsistencies without patient-level genetic and anatomical confirmation.

CONCLUSIONS

- Among patients with nHCM, older patients, male patients, patients in the Midwest, and Black and Asian patients had increased HCM-related healthcare costs.
- Future research is warranted to evaluate the root causes of these differences in costs of care for patients with nHCM.

Disclosures

MB, PG, SS: Employees of and own stock in Cytokinetics, Incorporated. **KB, QA, AB:** Employees of Optum/United Health Group (UHG), who were consultants for Cytokinetics, Incorporated for this study. **QA, AB:** Shareholders of UHG stock. **NR:** Consulting/speaking honoraria: Zoll Inc., Roche Diagnostics, American Regent, Bristol Myers Squibb, AstraZeneca, Idorsia, Novo Nordisk; research grants to the institution from Bristol Myers Squibb; support from the National Heart, Lung, and Blood Institute of the NIH under Award Number K23HL166961 (the content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH). **AO:** Consultant/advisor fees: Alexion, Bayer, BioMarin, Bristol Myers Squibb, Corvista, Cytokinetics, Edgewise, Imbria, Lexeo, Stealth, Tenaya; research grant: Bristol Myers Squibb.

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