Comparison of Improvements in Disease Activity between Classes of Biologic Disease Modifying Anti-Rheumatic Drugs in Routine Clinical Practice: Findings from a Large Contemporaneous Real World Cohort

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Background

RA is estimated to affect approximately 1.3 million adults in the US and accounts for a significant proportion of US health care spending with direct medical costs of over $70 billion a year. The primary driver of cost in RA is the specialty drug classes. Given the cost differential between available RA treatments, it is critical to ensure that patients are receiving optimal therapy at the optimal time. We compared improvements in disease activity between biologic DMARD classes, in a large cohort of patients with RA, under conditions of routine clinical practice.
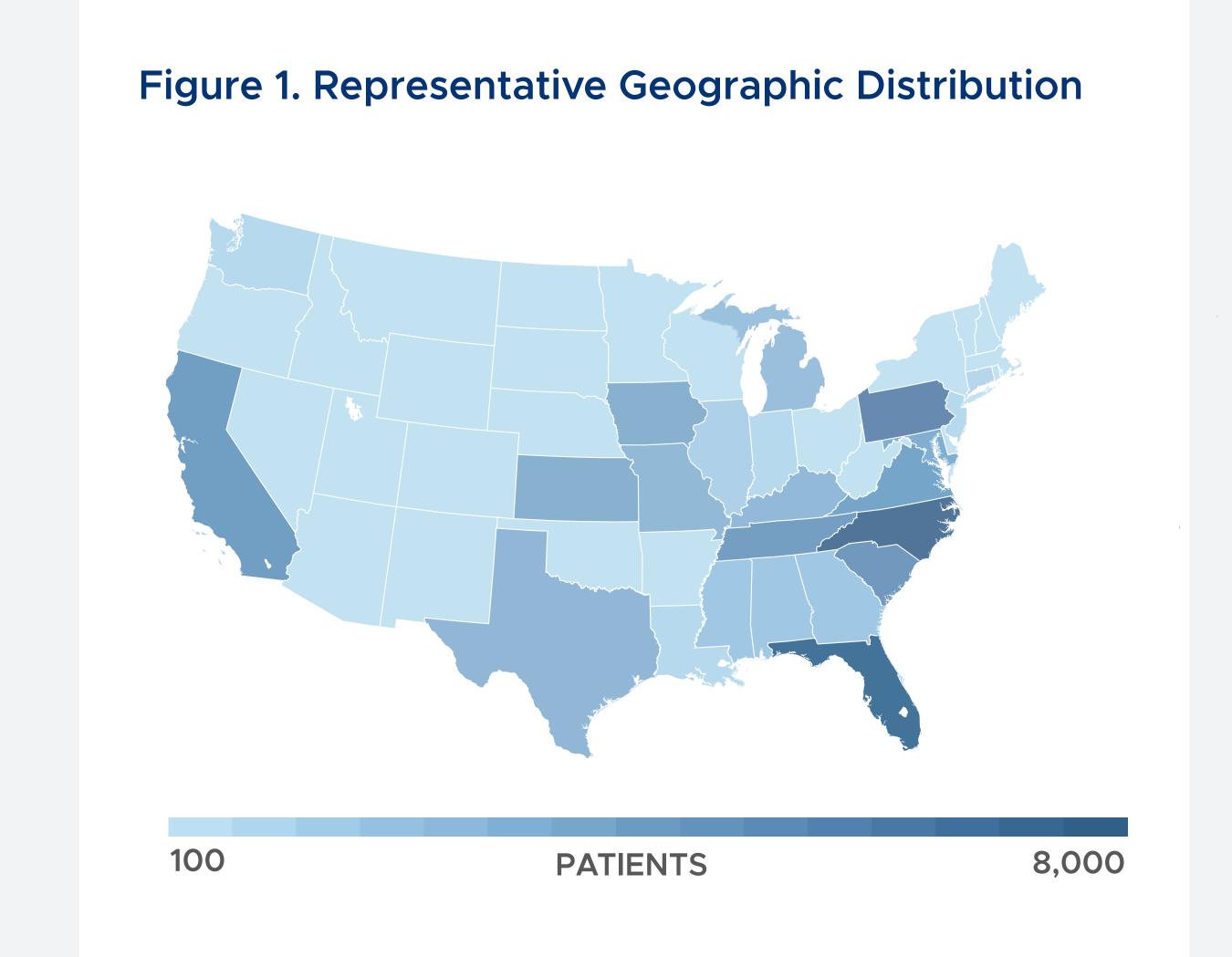
Methods

The OM1 platform collects, links, and leverages structured and unstructured data from electronic medical records (EMR) and other sources in an ongoing and continuously updating manner. The OM1 RA Cohort includes nationally representative data on >95,000 patients treated by rheumatologists [Figure 1]. Disease activity measures (both measured and identified using advanced natural language processing) were available in 59,326 patients and established American College of Rheumatology cutpoints were used to define disease severity. There were a median of 3 disease activity measures per patient per year. The analysis included patients who were treated with the same biologic disease modifying anti-rheumatic drug (bDMARD) for a 6-month period and had disease activity measures at baseline and at 6 months.
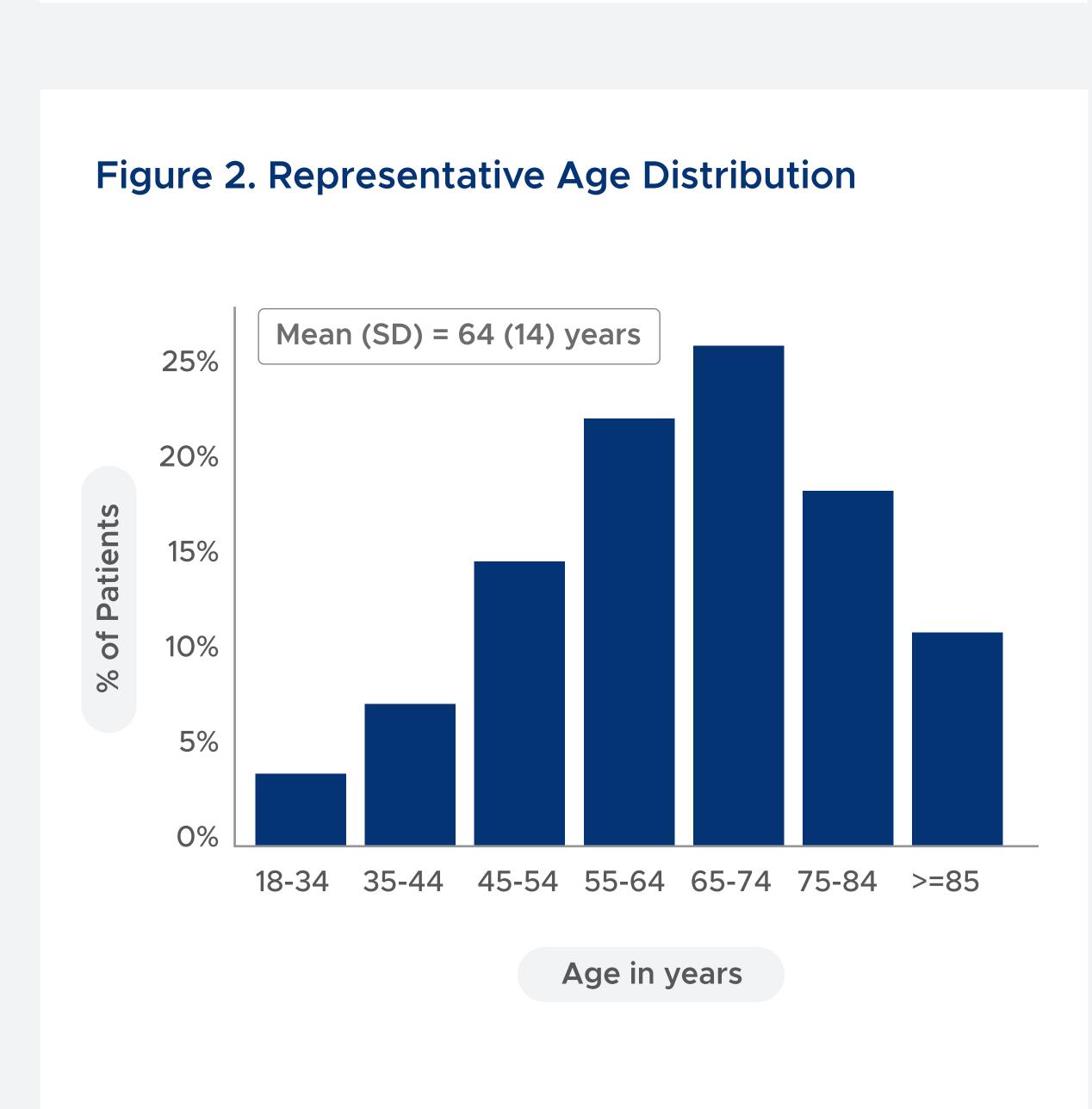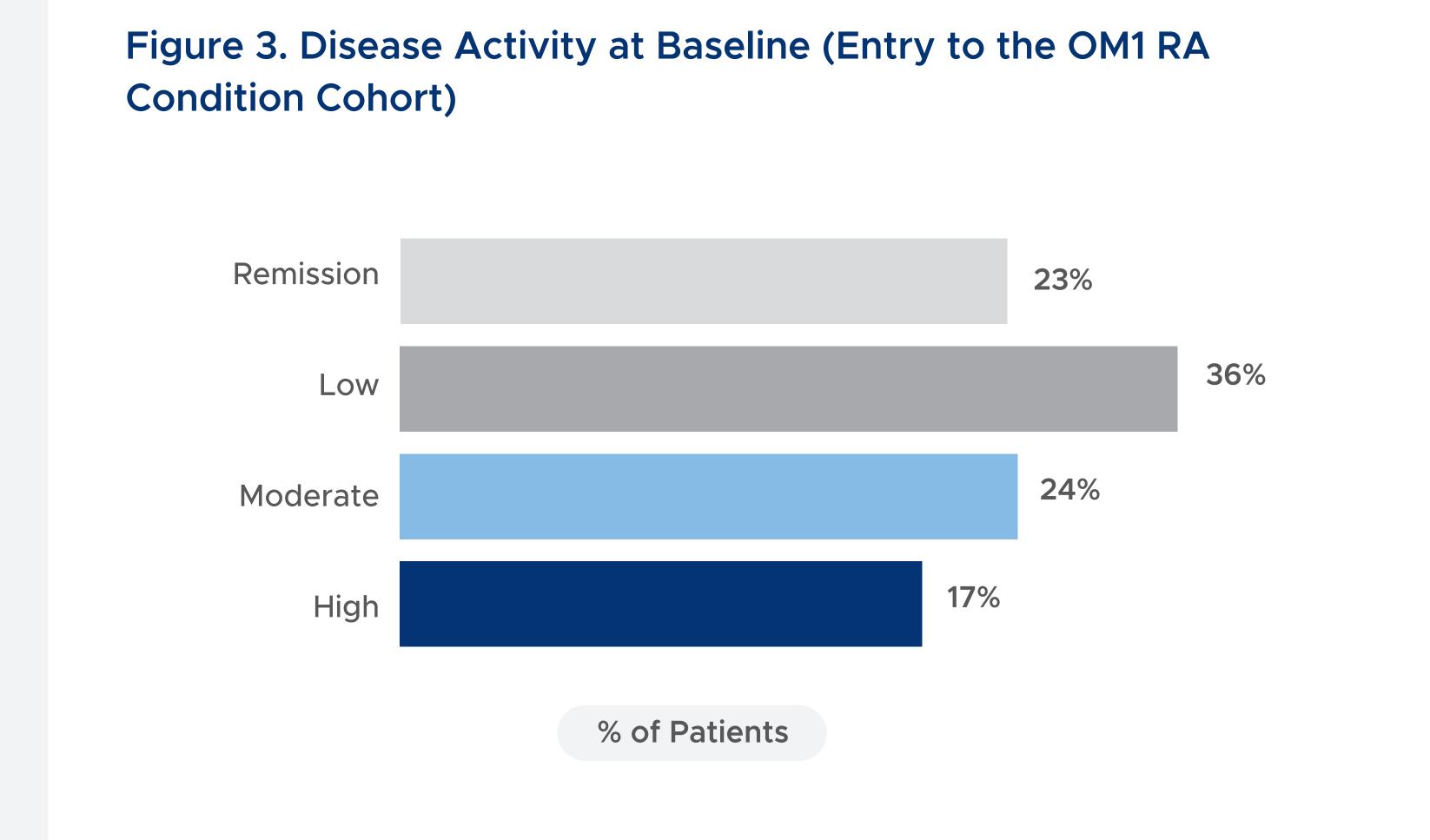
Results

The mean±SD age was 60±14 years [Figure 2], 76% of the cohort was female, and 71% Caucasian. At baseline, 23% of patients were in remission, and 36%, 24% and 17% had low, moderate and high disease activity, respectively [Figure 3]. Total and swollen joint counts were available in ~40% of the cohort and erythrocyte sedimentation rate was available in 70%. At least one extra-articular manifestation was documented in 36% of patients [Figure 4].
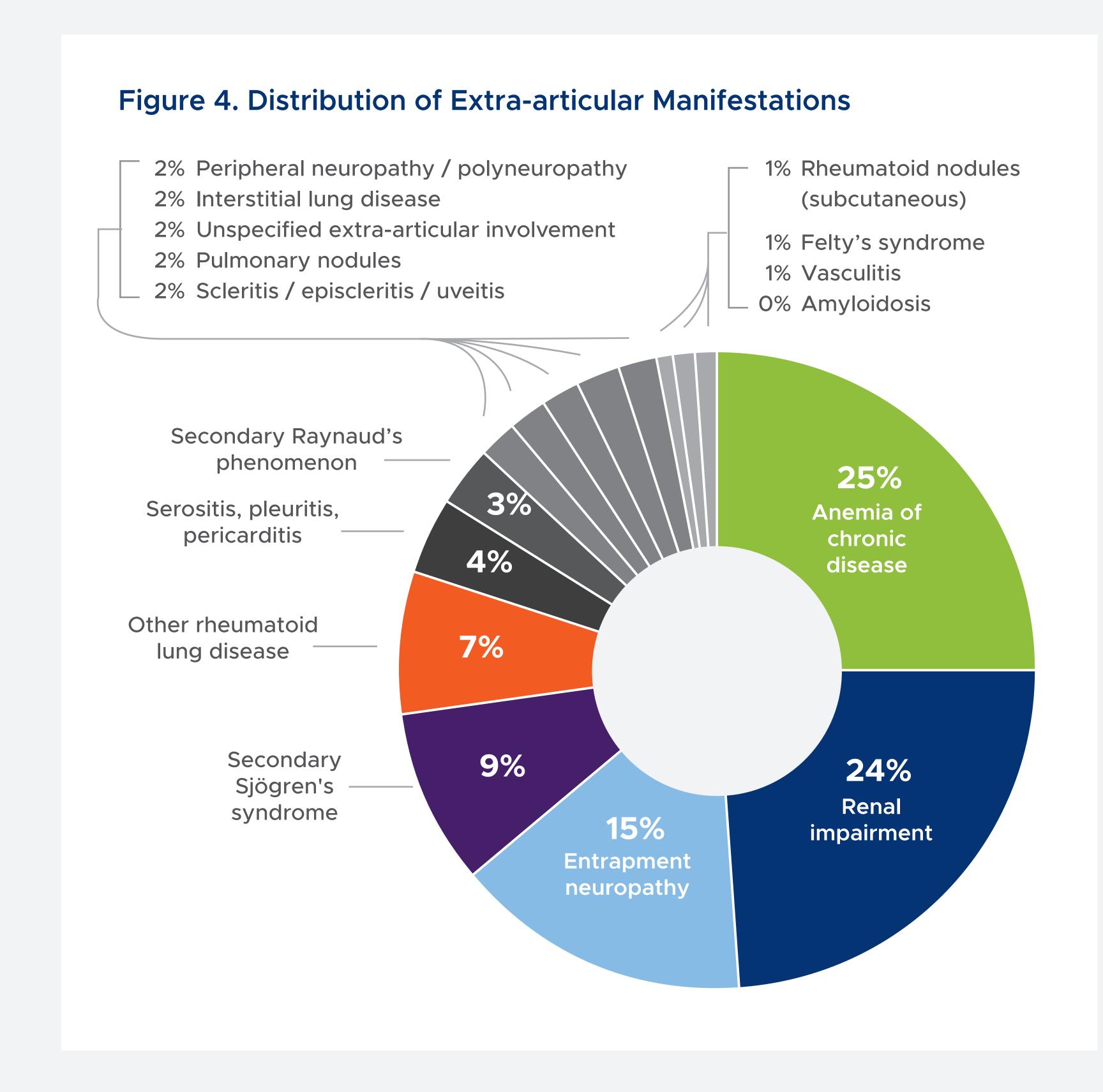
During the study period, 44% of the cohort received nonbiologic DMARD and 45% bDMARD; tumor necrosis factor inhibitor (TNF-inhibitor) accounted for 77% of bDMARD. Figure 5 presents the proportion of patients treated with bDMARD (categorized as TNF-inhibitor, n=9,574, 18% [95% CI: 17%-18%], and other bDMARD, n=5,877, 14% [13%-15%] for bDMARD naive and non-naive patients combined), with moderate to severe disease at baseline, who achieved low or remission status within the subsequent 6 months.

Analysis was stratified by whether the patient had documented prior treatment with biologics.

Conclusions

Using a data driven platform that enables large scale assessment (patient characteristics, treatment patterns, clinical outcomes) of patients, we found that naive patients treated with TNF-inhibitors showed the most improvement in disease activity overall. Among non-naive patients the TNF-inhibitor group had the highest proportion of patients achieving remission or low disease activity over a 6-month treatment period.

Figure 1. Representative Geographic Distribution

100　　　PATIENTS　　　8,000

Figure 2. Representative Age Distribution

Mean (SD) = 64 (14) years

Figure 3. Disease Activity at Baseline (Entry to the OM1 RA Condition Cohort)

- Remission 23%
- Low 36%
- Moderate 24%
- High 17%

% of Patients

Figure 4. Distribution of Extra-articular Manifestations

- 2% Peripheral neuropathy / polyneuropathy
- 2% Interstitial lung disease
- 2% Unspecified extra-articular involvement
- 2% Pulmonary nodules
- 2% Scleritis / episcleritis / uveitis
- 1% Rheumatoid nodules (subcutaneous)
- 1% Felty's syndrome
- 1% Vasculitis
- 0% Amyloidosis
- Secondary Raynaud's phenomenon
- Serositis, pleuritis, pericarditis 3%
- Other rheumatoid lung disease 4%
- Secondary Sjögren's syndrome 7%
- 9% Entrapment neuropathy
- 15% Entrapment neuropathy
- 25% Anemia of chronic disease
- 24% Renal impairment

Figure 5. % of Patients Achieving Remission or Low Disease Activity Status after Failing the Previous Therapy, and Having Received 6 months of Treatment with Biologic DMARD

TNF Inhibitor: Naive 23%, Non-naive 17%
Other Biologic: Naive 17%, Non-naive 14%