of the Indian Health Service (IHS) from 1998 to 2000 estimated a high prevalence with variation by region (14). A study of the Canadian Inuit population in the 1970s to 1980s found that spondyloarthropathy was present at higher rates than JRA in children, but the incidence of both was high (15). A study of the Alaska Native population in Southeast Alaska found a high incidence of JRA, with average annual incidence of 38.6 per 100,000 in the period from 1970 to 1984 (16).

The objective of this study was to determine the prevalence of JIA in the Alaska Native population statewide. Secondary objectives were to determine the prevalence of specific JIA subtypes and to define the clinical characteristics and treatment patterns of JIA in this population.

PATIENTS AND METHODS

Study population and clinical services. The Alaska Native population includes ~160,000 people of all ages distributed over a vast geographic area. In Alaska, all IHS services are managed by tribal organizations under a self-governance compact agreement. The Alaska Tribal Health System (ATHS) is the statewide affiliation of tribal health organizations providing health services to Alaska Native people. In 2015, the total user population for the ATHS was ~152,000, of whom ~56,000 were age ≤18 years. In the ATHS, adult rheumatologists travel to 12 regional field clinics, and the care is supplemented by patient travel to Anchorage or by telemedicine follow-up. Pediatric rheumatologists from Seattle Children's Hospital travel to Anchorage every 2 months and provide clinics at the Alaska Native Medical Center (ANMC) in Anchorage, the tertiary care hospital for Alaska Native patients statewide. Children with JIA are preferentially referred to pediatric rheumatologists, but in some cases may see adult rheumatologists in field clinics if they are unable to travel to Anchorage or Seattle. This research project was approved by the Alaska Area Institutional Review Board. Tribal approval was obtained from par-

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Case definitions. Our primary case definition was fulfillment of ILAR criteria for JIA as documented in the medical record. To be considered a case by our definition, patients were required to have the onset of JIA prior to age 16 years. Cases were included as prevalent if individuals were up to 18 years of age as of September 30, 2015. Prevalence was calculated as of September 30, 2015, requiring a diagnosis of JIA to be confirmed on that date or earlier. We used a secondary case definition of fulfillment of the 1977 JRA classification criteria.

Statistical analysis. The prevalence of JIA was calculated using the number of cases meeting the case definition divided by the number of children in the population denominator, expressed as a rate per 100,000. Prevalence was calculated overall and by sex. Age-adjusted rates were calculated overall using the 2000 projected US population (17). Male and female rates and rates for subtypes with <5 cases were not age-adjusted due to the small number of cases. 95% confidence intervals (95% CIs) were calculated around each proportion. Statistical analyses were performed using Stata, version 11.2.

RESULTS

The flow chart for inclusion of potential cases is presented in Figure 1. The total user population age ≤18 years was 56,289. Of 488 potential cases identified for medical record abstraction using broad search criteria, 42 were confirmed as having ate(w T 0 0i> cu ( )]TJ0.00

population (range 25–40% in different regional studies) (8) as well as the high prevalence of spondyloarthropathy in Alaska Native adults (range 1.1–2.5% based on studies in the 1980s to 1990s in different regions of the state) (8,13). In addition, data from Canadian indigenous children in the 1980s, before enthesitis-related arthritis criteria were developed, suggested high rates of spondyloarthropathy. One study found that spondyloarthropathy was relatively more common than JRA in indigenous Canadian children compared to white children (21), and a second study found that although spondyloarthropathy was relatively more common, both conditions occurred with high prevalence (15). It is possible that some cases of oligoarthritis in our study might be undifferentiated spondyloarthritis or enthesitis-related arthritis. The median age at onset of oligoarthritis was 5 years, with some cases occurring in children up to age 13 years. We followed the ILAR exclusion criteria and did not consider cases in males with positive HLA–B27 and age at onset after 6 years to be oligoarthritis. In one case, a female patient was considered to have oligoarthritis with onset of arthritis after age 6 years and HLA–B27 positivity. In some cases, because we were reviewing existing medical records, HLA–B27 status was unknown. Cases were classified based on the ILAR criteria using the information available in the medical record.

For comparison to older studies, we determined the prevalence of JRA and its subtypes according to the 1977 classification criteria. The overall prevalence of JRA was lower than JIA because it does not include some forms of arthritis (including enthesitis-related arthritis) that are included within the JIA classification scheme. We found an overall age-adjusted prevalence of JRA of 65.7 per 100,000, slightly higher than the pooled prevalence estimated in a recent systematic review but lower than described in Olmsted County, Minnesota (6,7). This prevalence is intermediate between estimates from the Oklahoma and Billings IHS areas regional clinics and only identified a small number of cases not seen at the ANMC. In addition, we used the IHS user population as the denominator in order to identify children who were accessing care in the tribal health system. Some Alaska Native children receive health care in other health systems, but those children were not in the denominator for this study. Fifth, we did not distinguish between acute and chronic uveitis on medical record abstraction. It is possible that acute anterior uveitis could be more common in this population with high rates of HLA–B27, but we are unable to comment on specific characteristics of uveitis. Finally, our search strategy identified a large number of patients who did not have JIA. However, the strategy to query a broad set of codes that include JIA and other conditions allowed us to ensure that cases coded in several different ways would be captured. Strengths of this project include the opportunity to assess the prevalence and clinical characteristics of JIA in a population not previously described and the ability to use several different sources for case ascertainment.

In conclusion, we found the prevalence of JIA to be slightly higher than described in the US population, with a higher proportion of enthesitis-related arthritis and HLA–B27 positivity. This study significantly adds to the limited literature on JIA epidemiology. Epidemiologic studies of JIA in other populations are warranted. Ideally, descriptions of health disparities in minority populations can be used to improve service delivery or develop interventions designed to improve outcomes. In clinical practice, although JIA may be slightly more common than in other populations, it remains relatively uncommon. The high prevalence of enthesitis-related arthritis and HLA–B27 in this population is useful information for clinicians and should be incorporated into educational programs. Finally, the high prevalence of JIA in the Alaska Native population suggests that studies of risk factors in this population would be informative and could lead to insight into the etiology of JIA.

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AUTHOR CONTRIBUTIONS

All authors were involved in drafting the article or revising it critically for important intellectual content, and all authors approved the final version to be submitted for publication. Dr. Ferucci had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study conception and design. Stevens, Ferucci.

Acquisition of data. Khodra, Ferucci.

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