Poster Number: 51

MetroHealth Medical Center

RESEARCH DAY 2023

Abstract Submission Form

Poster Title: **United States Trends in Knee Injuries: A Population Health Analysis from 2000-2022**

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Category: **Clinical Research**

Objectives: Osteoarthritis (OA) is a leading cause of mobility-related disability worldwide and contributes substantially to healthcare costs (*Vina & Kwoh, 2018*). In the knee, injuries, such as anterior cruciate ligament (ACL) and meniscal tears, play a crucial role in the development of post-traumatic osteoarthritis of the knee (PTOAK). Although the prevalence of PTOAK in the United States is projected to double by 2030 (Bank et al., under review), less is known regarding the epidemiology of its risk factors. Thus, this study aims to investigate the epidemiology of ACL and meniscal tears in the United States to better understand their contribution to PTOAK.

Methods: The TriNetX database was queried to obtain medical record data from over 56 healthcare centers within the United States. A cohort of patients with ACL and meniscal tears was identified using the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) coding. Descriptive epidemiological analysis was performed including stratification by age, sex, and race.

Results: As of 2022, the overall incidence proportion of ACL tears was 0.0649% with an incidence rate of 2.56×10^{-6} cases per person-day and prevalence of 0.160%. The incidence proportion of meniscus tears was 0.202%, incidence rate was 7.98×10^{-6} cases per person-day, and prevalence was 0.713%. By age, the 5 - 9-year-old group saw the highest prevalence of ACL tears (0.208% with 20,502 cases) in 2022. In contrast, meniscus tears were most prevalent in the 35 - 39-year-old group (1.43% with 66,658 cases). When stratified by sex, women consistently experienced higher incidence rates of both ACL and meniscus tears during the previous two decades ($p<0.001$). Stratified by race, the prevalence of ACL tears was the highest amongst Caucasians in 2022 (0.192%). Incidence rate of meniscus tears has also been consistently higher for Caucasians since the year 2000 ($p<0.001$).

Conclusion: The data in this study suggests a broader trend of increasing incidence proportions, incidence rates, and prevalence for ACL and meniscal tears. This indicates the need for research and intervention to mitigate the physical and financial burden of PTOAK in the United States. Future studies investigating population-wide prevention, identification, and early intervention of these injuries will serve to better inform physician decision-making, treatment strategies, and patient outcomes.