Social Impact of Anterior Cruciate Ligament Injury, Surgery and Recovery

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INTRODUCTION: Anterior cruciate ligament (ACL) injury is the most common sports-related knee injury, and many patients who wish to return to sporting activities that involve cutting and pivoting will choose to undergo ACL reconstruction (ACLR) [1]. Each year, more than 120,000 ACL reconstructions are performed in the US alone [2]. Even though ACLR can allow people to return to sporting activities with a stable knee, there is still an increased risk of post-traumatic osteoarthritis (PTOA) after the ACL injury and subsequent reconstruction. Studies have demonstrated that around 50% of patients who undergo ACL reconstruction develop OA within 10-15 years [3]. Because of its early onset, PTOA often compromises productivity and quality of life in working persons. We present findings from an exploratory qualitative study of individuals who have sustained ACL injury to identify their experience with injury as well as their perceptions of PTOA risk.
METHODS: This study was approved by the Mass General Brigham (MGB) IRB. We recruited potential participants from orthopedic practices at MGB hospitals. Individuals were aged 18-35, English speaking, and had an ACL tear documented on MRI within two years of enrollment, with or without surgical reconstruction. We excluded individuals who had a history of ACL injury to either knee prior to two years before enrollment, as well as individuals with moderate to severe radiographic OA (Kellgren-Lawrence grade 3 or 4). Participating individuals completed either a semi-structured individual interview or a small focus group with up to two others. Interviews and focus groups lasted between 45 to 90 minutes and were recorded and transcribed. Data were analyzed using a thematic analysis approach, including constant comparison [4]. Open coding of the interviews was followed by an iterative development of broad categories as a group using NVivo (Lumivero). Data were analyzed using an intersectional approach so that we could explore variation in how individuals experienced their injury, recovery, and perceptions of developing OA based on their social standing and personal experiences.
RESULTS SECTION: A total of 25 individuals participated (median age 24, 15 [60%] females) participated in 4 focus groups and 15 individual interviews. On average, focus groups and interviews occurred 10 months after individuals' ACL injury, at which point they reported a median KOOS pain score of 83 (IQR = 11) (Table 1). Based on our analysis, we identified three broad themes, each encompassing two or three subthemes. Our first theme focused on how the timing of the injury and subsequent recovery impacted individuals' life course, including the trajectories and transition they experience in relation to others or their own expectations. For instance, individuals who were in college often felt the injury limited their ability to socialize with their peers and forced them to think more about their own expectations for the future than they would have otherwise. In essence, having the injury at a young age felt anachronistic, which in turn created internal tensions between where they are vs. where they feel they ought to be. Our second theme centered on individuals' use of grounding or coping mechanisms, including how factors benefited or hindered their ability to deal with the injury, such as perceived control over recovery, social capital, and financial resources. These coping mechanisms were important to recovery for many participants since they often reported feeling high levels of distress after surgery, which sometimes lasted long into recovery. The third theme centered on how perceptions of trust and experiences with medical systems influenced their perceptions of injury and recovery, including developing PTOA. For instance, individuals expressed varying degrees of confidence in their providers and the overall healthcare system, which was often influenced by prior engagement with the medical system as a patient (either themselves or loved ones), and/or a working knowledge of healthcare through employment or past participation in research. Examining these themes through an intersectional lens revealed that individuals had unique experiences of these themes based on the combination of their socioeconomic status, sex, ethnicity, and race, often manifesting due to financial resources, social capital, and experiences with the healthcare system.
DISCUSSION: Based on these findings, we suggest that when trying to understand the experiences of individuals with injuries, it may be important to move from a medical model to a social model. The medical model focuses on the individual and the impairment whereas the social model shifts its focus to the barriers that individuals experience due to their injury, including factors such as systemic barriers, stigmatization, limited opportunities, and social exclusion. Many of the negative experiences that individuals mentioned during our interviews and focus groups were about these barriers rather than the injury itself, such as feeling like they were missing out on important life events and experiencing isolation. A major limitation of the study is a lack of racial and ethnic diversity within the patient population (Table 1), which is representative of the patient population at Mass General Brigham but not of the wider community of patients experiencing ACL tears. Future studies should find creative ways to engage patients from underrepresented groups, who are often also less likely to be willing to engage in research.
SIGNIFICANCE/CLINICAL RELEVANCE: Providers, including orthopedic surgeons, PTs, and other members of the care team should work with their patients to 1) set realistic life course expectations, 2) find new means of grounding or coping – such as encouraging exploration of hobbies not based in physical activity, and 3) cultivate trusting relationships with patients, which can in turn increase their trust in the medical system as a whole. Offering social support resources, such as free support groups or discussions led by people who have recovered from ACL tears, is one actionable way to use the social model to improve patient outcomes following ACL injury.

Table 1. Demographic Characteristics of Interview/Focus Group Participants.

Age at time of interview [median (IQR)]	24 (7)
Sex (% of total)	
Male	10 (40%)
Female	15 (60%)
Race (% of total)	
White	18 (72%)
Black or African American	1 (4%)
Asian	2 (8%)
More than one race	2 (8%)
Prefer not to state	2 (8%)
Ethnicity (% of total)	
Hispanic or Latino	4 (16%)
Not Hispanic or Latino	21 (84%)
Days since injury [median (IQR)]	286 (215)
KOOS pain [median (IQR)] (0-100, 100=best)	83 (11)

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