

# Knowledge of Community Population in Al Ahsaa about The Outcomes of ACL Injury, 2017

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## ABSTRACT

**Background:** The injury of the anterior cruciate ligament (ACL) is a common injury of the knee which needs an accurate medical management for avoidance of the complications. However, knowledge about the risk factors and effects of ACL are limited in Kingdom of Saudi Arabia (KSA).

**Objectives:** Assessing the knowledge of Saudi subjects about the effects of anterior cruciate ligament (ACL) injury on daily activities in Al Ahsaa City, Kingdom of Saudi Arabia (KSA).

**Methods:** A cross sectional study that included 700 Saudi subjects who were randomly chosen from June – August 2017. The volunteers were interviewed in shopping malls and filled out a questionnaire sheet that included information about their demographics and questions associated with ACL risk factors and outcomes. **Results:** About 6% of subjects declared suffering from ACL injuries. The knowledge of respondents toward ACL injury definition, risk factors, symptoms, treatment and complications were inadequate among 71.3% of subjects. The good knowledge was significantly associated with the older age and male gender while the education level showed no association with knowledge score.

**Conclusion:** There was a lack of knowledge about ACL injuries among Saudi participants that need efficient educational campaigns for increasing the awareness about the etiology, risk factors, treatment and complications of ACL injuries.

**Key words:** Anterior Cruciate Ligament (ACL), Knowledge, Risk Factors, Outcomes, Al Ahsaa.

## INTRODUCTION

The injury of the anterior cruciate ligament (ACL) is a common injury of the knee which needs an accurate medical management for avoidance of the complications<sup>(1, 2)</sup>. The appropriate medical diagnosis is associated with the knowledge about the risk factors, mechanism of injury as well as physical and radiological symptoms. After surgical, reconstruction or physical therapy, the patient will regain the function and stability of the knee<sup>(3)</sup>.

The injury of the anterior cruciate ligament (ACL) has several mechanisms as collisions from accidents or fall and sport field<sup>(4, 5)</sup>. The most common types of ACL tears (70%) occur with non-contact during sports also hitting the lateral knee will result in ACL injury<sup>(6, 7)</sup>.

The ACL injury is the main risk factor for Knee instability with secondary disorders in the intra- and peri-articular structures of the knee and cause degeneration of the articular structures<sup>(8)</sup>. Also, ACL is associated with the injury of the meniscal especially among young and trainees, also among 50% of these injuries may be complicated to knee osteoarthritis<sup>(9, 10)</sup>.

ACL injury has a poor healing capacity due to anatomical, biological and biomechanical factors and could be complicated with persistent instability of the knee with pulling the ligaments stumps apart thus affecting the quality of life<sup>(11, 12)</sup>.

## AIM OF THE STUDY

The study aimed at assessing the knowledge of Saudi subjects about the effects of anterior cruciate ligament (ACL) injury on daily activities in AL Ahsaa City, KSA.

## SUBJECTS AND METHODS

### - Study design

A cross sectional study was used during the period of June-August 2017 in Al Ahsaa, Kingdom of Saudi Arabia (KSA).

### - Sample size and population:

The study included 700 subjects who were randomly chosen from Saudi subjects from both genders using a multistage sampling method. The included subjects were interviewed in different shopping malls in Al Ahsaa region.

### Study tools

A questionnaire sheet was designed after reviewing the literature review and studies conducted in different parts of the world. The questionnaire included 3 parts. The first part included questions about the age, gender and educational level. The second part associated with the prevalence of ACL injuries among the community and the third part included questions related to the risk factors and the effects of ACL injury.

**Ethical considerations**

The questionnaire and the study protocol were approved from the supervisors. All the participants gave a written consent for approval in participating in the study. **The study was done after approval of ethical board of King Faisal university.**

**Statistical analysis**

The data were analyzed using Statistical Package for Social Science (SPSS) program version 22. Chi-square test was used for testing the association between demographics and knowledge.

**RESULTS**

**Demographics of the studied subjects:**

The age of respondents was 20-30 years old in 45.7%, 31-40 years old in 33.6% and more than 40 years old in 20.7% of subjects. Most of the included subjects (74.1%) were males and 25.9% were females. About 73% of subjects were college graduates, 31% received secondary school degree and 20% had primary school stage (Table 1).

**Table (1): Characteristics of participants (700)**

	No.	Percentage (%)
<b>20-30</b>	320	45.7%
<b>31-40</b>	235	33.6%
<b>≥41</b>	145	20.7%
<b>Male</b>	519	74.1%
<b>Female</b>	181	25.9%
<b>College</b>	511	73%
<b>Secondary School</b>	147	31%
<b>Primary School</b>	42	20%

**Table (2): Awareness of respondents about ACL injury**

	Correct	Incorrect
1- An ACL injury is the tearing of the anterior cruciate ligament in the knee	211 (30.1%)	489 (69.9%)
2- Collisions from accidents or fall and sport field are the major risk factors for ACL injury	327 (46.7%)	373 (53.3%)
3- Severe pain, swelling and a feeling of instability are the most common symptoms for ACL injury	290 (41.4%)	410 (58.6%)
4- The treatment depends on the severity of the injury	268 (38.3%)	432 (61.7%)
5- Rest and rehabilitation exercises help in regaining the strength of the knee	197 (28.1%)	503 (71.9%)
6- Surgery followed by rehabilitation are the most common treatments for ACL injury	210 (30%)	490 (70%)
7- People who experience an ACL injury are at higher risk of developing knee osteoarthritis	160 (22.9%)	540 (77.1%)
8- ACL may result in Knee instability with secondary disorders in the intra- and peri-articular structures of the knee	243 (34.7%)	457 (65.3%)

**Prevalence of ACL injuries:**

The present study showed that the prevalence of ACL injury was 6% while 94% declared not suffering from ACL injuries (Figure. 1).

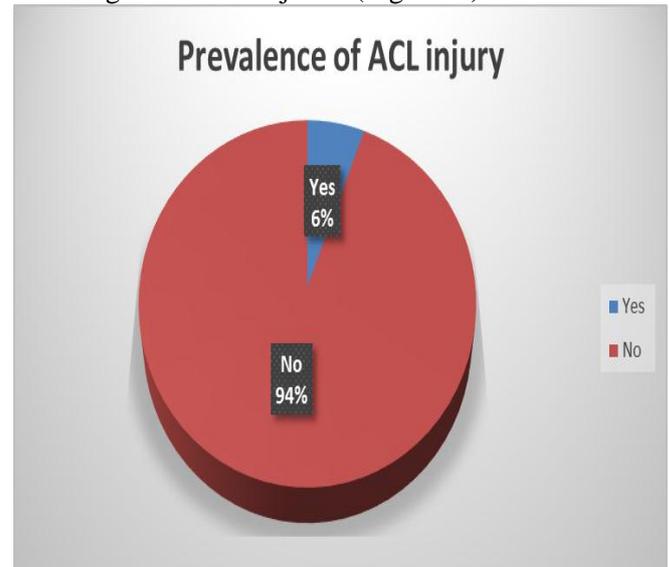


Figure. 1: prevalence of ACL injury among included subjects.

**Assessment of knowledge of included subjects**

The knowledge of respondents toward ACL injury was presented in table 2. Most of the subjects have insufficient knowledge regarding the definition of ACL injury (69.9%). Also, only 46.7% and 41.4% have adequate knowledge about the etiology and the symptoms of ACL injury. About 61.7% of subjects don't know that the treatment depends on the severity of the injury. The knowledge regarding the treatment options of ACL injury is inadequate among 71.9% and 70% of subjects. Also, 77.1% of subjects had insufficient knowledge about the developing osteoporosis after ACL injury and 65.3% don't know that ACL may result in Knee instability with secondary disorders in the intra- and peri-articular structures of the knee.

**Level of awareness of participated subjects**

Most of the participants (71.3%) had inadequate knowledge about ACL injury while 28.7% had good knowledge (Table 3).

**Table (3): Respondents' knowledge about ACL injuries**

Awareness level	Frequency	Percent (%)
Poor	499	71.3
Good	201	28.7
Total	700	100.0

**Association between knowledge and demographics of included participants**

Table 4 shows the association between knowledge level and respondents' demographics. The good knowledge was significantly associated with the older age and male gender while the education level showed lack of association with knowledge score.

**Table. (4): Association between knowledge of ACL injury and demographic variables of respondents**

	Good Knowledge (n=201)	Poor Knowledge (n=499)	P-value
<b>20-30</b>	43 (21.4%)	277 (55.5%)	0.001
<b>31-40</b>	39 (19.4%)	196 (39.3%)	
<b>≥41</b>	119 (59.2%)	26 (5.2%)	
<b>Male</b>	182 (90.5%)	237 (67.5%)	0.001
<b>Female</b>	19 (9.5%)	162 (32.5%)	
<b>College</b>	148 (73.6%)	371 (74.3%)	0.24
<b>Secondary School</b>	42 (20.9%)	105 (21%)	
<b>Primary School</b>	11 (5.5%)	23 (4.7%)	

**DISCUSSION**

The present study was the first study to assess the level of knowledge of Saudi participants about ACL injuries. This study suffered some limitations including shortage of time, most of subjects were males and the study population must include more patients with ACL injuries to compare their knowledge about the complications with the community population.

The level of knowledge was inadequate among most of the participants regarding etiology, symptoms, management and complications of ACL injury. The good knowledge was significantly associated with old age and male gender and this could be attributed to that most of ACL injuries occur among males, also the older age<sup>(13)</sup> was found to be at higher risk of ACL injury<sup>(14)</sup>.

It is important to acquire good knowledge about the long-term effects of ACL injuries to make the right decision for the treatment options<sup>(15)</sup>. Also, this may help in decreasing the risks of osteoarthritis and impairing the quality of life<sup>(16, 17)</sup>.

About 6% of the included subjects suffered from ACL injury. The prevalence of ACL injury is still inadequate as there is a lack of national and international population based studies about ACL injuries but about over two million injuries occur every year<sup>(3)</sup>. Also, other hospital based studies showed a prevalence that varied from 30-81 cases among every 100,000 subjects<sup>(18)</sup>.

**CONCLUSION**

There is a lack of knowledge about ACL injuries among Saudi participants that need efficient educational campaigns for increasing the awareness about the etiology, risk factors, treatment and complications of ACL injuries. Understanding the etiology, effects and management of ACL injury will help in increasing the quality of life among subjects with ACL injuries.

**REFERENCES**

- Jacobi M, Reischl N, Rönn K, Magnusson RA, Gautier E, Jakob RP (2016): Healing of the Acutely Injured Anterior Cruciate Ligament: Functional Treatment with the ACL-Jack, a Dynamic Posterior Drawer Brace. *Advances in Orthopedics*, 5: 1609067.
- Rocheongar G, Plaweski S, Azar M, Demey G, Arndt J, Louis ML *et al.* (2014): Management of

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- combined anterior or posterior cruciate ligament and posterolateral corner injuries: a systematic review. *Orthopaedics & traumatology, surgery & research*, 100: S371-378.
- 3.Dhillon KS (2014):** Doc' do I need an anterior cruciate ligament reconstruction? What happens if I do not reconstruct the cruciate ligament?. *Malaysian Orthopaedic Journal*, 8: 42-47.
- 4.Mehl J, Diermeier T, Herbst E, Imhoff AB, Stoffels T, Zantop T et al. (2017):** Evidence-based concepts for prevention of knee and ACL injuries. 2017 guidelines of the ligament committee of the German Knee Society (DKG). *Archives of orthopaedic and trauma surgery*, 7: 1-11.
- 5.Nematollahi M, Razeghi M, Tahayori B, Koceja D (2017):** The role of anterior cruciate ligament in the control of posture; possible neural contribution. *Neurosci Lett.*, 659: 120-123.
- 6.Mountcastle SB, Posner M, Kragh JF, Jr., Taylor DC (2007):** Gender differences in anterior cruciate ligament injury vary with activity: epidemiology of anterior cruciate ligament injuries in a young, athletic population. *The American journal of sports medicine*, 35: 1635-1642.
- 7.Beynon BD, Vacek PM, Newell MK, Tourville TW, Smith HC, Shultz SJ et al. (2014):** The Effects of Level of Competition, Sport, and Sex on the Incidence of First-Time Noncontact Anterior Cruciate Ligament Injury. *The American journal of sports medicine*, 42: 1806-1812.
- 8.Nyland J, Mattocks A, Kibbe S, Kalloub A, Greene JW, Caborn DN (2016):** Anterior cruciate ligament reconstruction, rehabilitation, and return to play: 2015 update. *Open access journal of sports medicine*, 7: 21-32.
- 9.Joseph AM, Collins CL, Henke NM, Yard EE, Fields SK, Comstock RD (2013):** A multisport epidemiologic comparison of anterior cruciate ligament injuries in high school athletics. *Journal of athletic training*, 48: 810-817.
- 10.Lohmander LS, Englund PM, Dahl LL, Roos EM (2007):** The long-term consequence of anterior cruciate ligament and meniscus injuries: osteoarthritis. *The American journal of sports medicine*, 35: 1756-1769.
- 11.Murawski CD, van Eck CF, Irrgang JJ, Tashman S, Fu FH (2014):** Operative treatment of primary anterior cruciate ligament rupture in adults. *The Journal of bone and joint surgery. American volume*, 96: 685-694.
- 12.Vavken P, Murray MM (2011):** The potential for primary repair of the ACL. *Sports medicine and arthroscopy review*, 19: 44-49.
- 13.de Loes M, Dahlstedt LJ, Thomee R (2000):** A 7-year study on risks and costs of knee injuries in male and female youth participants in 12 sports. *Scandinavian journal of medicine & science in sports*, 10: 90-97.
- 14.Smith HC, Vacek P, Johnson RJ, Slauterbeck JR, Hashemi J, Shultz S et al. (2012):** Risk Factors for Anterior Cruciate Ligament Injury: A Review of the Literature — Part 1: Neuromuscular and Anatomic Risk. *Sports Health*, 4: 69-78.
- 15.Bennell K, Hunter DJ, Vicenzino B (2012):** Long-term effects of sport: preventing and managing OA in the athlete. *Nature reviews. Rheumatology*, 8: 747-752.
- 16.Burgener M, Arnold M, Katz JN, Polinski JM, Cabral D, Avorn J et al. (2005):** Older adults' knowledge and beliefs about osteoporosis: results of semistructured interviews used for the development of educational materials. *The Journal of rheumatology*, 32: 673-677.
- 17.McHorney CA, Schousboe JT, Cline RR, Weiss TW (2007):** The impact of osteoporosis medication beliefs and side-effect experiences on non-adherence to oral bisphosphonates. *Current medical research and opinion*, 23: 3137-3152.
- 18.Nordenvall R, Bahmanyar S, Adami J, Stenros C, Wredmark T, Fellander-Tsai L (2012):** A population-based nationwide study of cruciate ligament injury in Sweden, 2001-2009: incidence, treatment, and sex differences. *The American journal of sports medicine*, 40: 1808-1813.