Anterior Cruciate Ligament knee Injuries: Patients' needs

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Abstract

Back ground: The anterior cruciate ligament injury is a serious injury often resulting in hospital admission for surgery. Assessment of anterior injury patients' needs with anterior cruciate ligament is crucial to enable the development of better healthcare services and contribute towards a more holistic care, which will ultimately improve the quality of life for these patients. **The study aimed** to assess the needs of patients with anterior cruciate ligament knee injuries. **Research design:** A descriptive exploratory design was used in this study. **Study subject:** A purposive sample composed of 150 patients with anterior cruciate ligament injury attended orthopedic department and orthopedic outpatient clinic at Zagazig University Hospitals. **Tools of data collection:** Patients' assessment interviewing questionnaire, Patients' practices assessment questionnaire, and Patients' needs assessment questionnaire were used to collect data. **Results:** 64.7% of studied patients had age <40 years, 69.3% of patients were males, 62.7% of patients educated and 95.3% lived in rural area. 73.3% and respectively 94.0% of patients had satisfactory total knowledge and practice level. Moreover, 88.7% of patients their needs were highly affected by anterior cruciate ligament injury namely spiritual needs 82%, followed by socioeconomic needs 72.7%, psychological needs 71.3% & physical needs 39.3%, while only 11.3% of them had low affection. There was statistically significant positive correlation of patients' knowledge score with patients' practice score; patients' needs score, and patients' age. **Conclusion:** Majority of patients' total needs were affected by anterior cruciate ligament injury. **Recommendation:** Provision training courses and rehabilitation programs with multidisplinary team for patients with anterior cruciate ligament injuries to help them meeting their needs**.**

Key words*:* Anterior Cruciate Ligament, Patients' Needs, Knee, and Injuries.

Introduction

The anterior cruciate ligament plays a vital role during many actions and movements performed by the body. The ACL's primary functions include preventing certain movements of the knee from occurring in order to prevent injury. The ACL injury is one of the most common knee injuries in heavy activities. High incidence rates are reported among persons between the ages of 15 and 60 years. The ACL injuries frequently happen in activities that require fast movement**.** A sudden stop, twist, pivots or changes in direction at the knee joint is another cause of ACL injury. Motor vehicle accidents and repeated trauma in which the knee is forced under the dashboard may also cause rupture of the ACL[1] **.**

Patients with ACL injury face many physical, psychological and socioeconomic needs, as those patients tend to increase their physical limitations, pain and functionality restriction with disease progression. Thus, these individuals suffer from progressive increased impact on their activities of daily living, which leads to losses in labor relations, leisure, social life, and sleeping quality, leading also to important decrease in their quality of life , so the physical needs of those patients should be assessed[2] .

Moreover, psychological needs should also be assessed for patients with ACL injury. Patients feel isolated,

embarrassed, self-image disorders, et cetera. So, motivate patients to be participated in social interaction by support groups, by meeting with other patients they can get the experiences and learn how to cope with the emotional ups down. This type of interaction helps to improve quality of life. Family support is also another important component while providing psychological support to the individuals. Emotional support and positive beliefs toward patients can help to increase the hope, confidence and self- esteem [3].

Also, socioeconomic needs should be assessed for those patients because such socioeconomic needs influences health care quality and patients outcomes. Socioeconomic status is a complex characteristic, generally understood to encompass not only income and education level, the measures most commonly used, but also a wide range of associated factors that may affect the quality of health care patients receive, including insurance status, access to care, patients' health beliefs, and many facets of the doctor-patient relationship [4].

The most important spiritual needs included for patient with ACL injury being were positive, loving others, finding meaning and relating to God. The least important was needed to ask "why" questions and preparing for dying. Desire for nursing assistance with spiritual needs was moderate and varied. Variables correlated with spiritual needs and desire for nurse help included religiosity and being an inpatient. Desire for nurse help and importance of spiritual needs were directly correlated [5].

Education about exercises, reasons for limited motion and crutch use will help stimulate early functional recover of knee function and help the patient create a realistic image about the rehabilitation process in general [6]. Nurses play an important role to assess needs for patients who had reconstruction surgery. The nurse presents instruction about weight bearing limit, exercise restrictions. Nurses' initial aims are to encourage early mobilization, full extension of the knee, walk and weight bear as soon as possible to regain normal joint movement and strengthen the muscles around the knee and assess for complications signs[7].

Significance of the study

The annual incidence of ACL injury in Egypt was 1 in 200 among general population, this mean more than 100000 new ACL injury annually, ACL injury in Alsharkia government estimated to 9.4 injuries this meant 1000 cases annually occurred due to lack of patient knowledge, practice for performing exercises and lack of programs for ACL injury prevention[8].

The ACL injury is the life changing injury which brings the huge change in patients' life needs. The changes are irreversible which brings alteration in most of the physical, emotional, and occupational aspects as they are learning to cope with daily life activities and their altered emotions[9]. Therefore, the aim of the study was to assess the needs of patients with ACL knee injuries.

Aim of the Study:

This study aimed to: assess the needs of patients with ACL knee injuries.

Research Questions:

- What is the level of patients' knowledge regarding anterior cruciate ligament knee injury?

- What is the level of practices for patients with anterior cruciate ligament knee injury?

- What are the needs of patients with anterior cruciate ligament knee injury?

Operational Description for patient Needs:

This consisted of four needs such as the physical, psychological, socioeconomic and spiritual needs for patients undergoing ACLRS.

A)-Physical needs contained 7 parts as Pain intensity (6items), Edema (6 items), Ability to walk (5 items), Ability to climb the stairs (5 items), Ability to run (5 items), Ability to jump (5 items), and Ability to perform general activities (6 items).

B)-Psychological needs included (14) items as stress and anxiety do you have in his life, ability to concentrate etc .

C)-Socioeconomic needs included (11) items as can do family duties, can assist the others…..etc .

D)-Spiritual needs included (8) items as feel that patient future is unclear, feel agoal for patient life etc

Subject and Methods:

Research design:

A descriptive exploratory design was used in this study

Study Settings:

The present study was conducted in two settings namely orthopedic surgery department and orthopedic outpatient clinics at Zagazig University Hospitals, the orthopedic surgery department presents in the fifth floor of surgical hospital; it is composed of two wards (male and female) and number of beds is 80. The orthopedic outpatient clinic present in the second floor of outpatient clinics at Zagazig University Hospitals.

Study Subject:

A purposive sample consisted of 150 adult patients with ACL injury admitting to orthopedic department and orthopedic outpatient clinics at Zagazig University Hospitals. Whose fulfillment inclusion and exclusion criteria of research, about 6 patients per week ,duration of data collection is 6 months .Sampling criteria: age 18≥ 65, acceptance to participate in study, able to communicate , free from any cognitive or mental impairment. Exclusion criteria: patient with chronic disease.

Tools of data collection:

Tool I: Patient's Interviewing Questionnaire: Was designed by the researcher based on relevant literature review **Xie,** [1]. It covered two parts as the following:

Part I: **Patient's demographic characteristics**: This part was concerned with assessing the demographic characteristics of patients. It contained eight questions such as: age, gender, level of education, occupation, marital status, area of residence, monthly income and disease duration.

Part II: **Patient's knowledge Assessment Questionnaire:** This part was intended to assess patient's knowledge regarding ACL injury, and anterior cruciate ligament reconstruction surgery.

Scoring System:

For the knowledge items, a correct answer was scored one and the incorrect was scored zero. For each area of knowledge, the scores of items were summed-up and the total divided by the number of items, giving a mean score for the area, these scores were converted into percent scores. The knowledge was considered satisfactory if the percent score was ≥ 60.0% and unsatisfactory if < 60.0%, based on data entering and statistical analysis.

Tool II: **Patient's Practices Assessment Questionnaire:** This tool was used to assess patient's practices level post ACL injury. It was adopted

from **Katharina,** [10] and covered the following: Patient's ability to perform exercises, ability to weight bearing, and wear knee bracing.

Scoring System:

Each practice item observed to be done correctly was scored one and the not done zero, for each area of practices, the scores of items were summed-up and the total divided by the number of items, giving a mean score for the area, these scores were converted into percent scores. The practices were considered satisfactory if the percent score was ≥ 60 % and unsatisfactory if < 60%, based on data entering and statistical analysis.

TOOLIII: **Patient's Needs Assessment Questionnaire**: This tool was used to assess the physical, psychological, socioeconomic and spiritual needs for patients with ACL injury. This tool adopted from **Noyes, Barber& Moor** [11]

Scoring System:

For the needs items, the unaffected answer was scored one and the affected answer was scored zero. For each area of needs, the scores of items were summed-up and the total divided by the number of items, giving a mean score for the area, these scores were converted into percent scores. The needs were considered affected if the percent score was ≥ 60 % and unaffected if < 60 %, based on data entering and statistical analysis.

Content Validity and Reliability:

Once the tool was prepared in their preliminary form, the data collection tool presented to a panel of three experts from nursing field, these included three professors of medical-surgical nursing from faculty of nursing, Zagazig University. These experts reviewed the tool for relevance comprehensiveness, clarity, and ease of administration. Minor modifications were done according to the experts judgment. In the present study, the overall reliability of tools was assessed using Cronbach's Alpha test, it was 0.83 for knowledge (Tool I), it was 0.84 for practice (Tool II) and, it was 0.85 for physical needs, 0.63 for psychological needs, 0.65 for socio-economic needs and 0.65 for spiritual needs (Tool III) acceptable.

Field work:

The data collection process of this study was carried out through six months in the period from beginning April 2019 to the end of September 2019.The researcher collected data from two shifts, the morning and the afternoon shifts, three days per week.

The researchers secured all necessary permissions from the director of Zagazig University Hospital and the orthopedic department directors. The researcher visited the study settings, met with the directors, explained to them the aim of the study as well as the process of collection of the data to have their cooperation during data collection and to set its schedule so that it did not interfere with patient's health case.

The researcher then met with the patients individually, explained the aim of the study, the process of collection of data and invited to participate after being informed about their rights. Upon agreement to participate, the researcher started the interview with patient individually using the data collection tools .The time consumed to fill out the full questionnaires ranged 25- 35 minutes.

Pilot study:

A pilot study was conducted on 15 patients representing 10% of the main study sample. The purpose of the pilot study was to check and ensure the clarity, applicability, and feasibility of tools, to identify the difficulties that may be faced during data collection. It also helped to estimate the time needed to

fill in the forms. Since no modifications were done in the tool, those who shared in the pilot study were included in the main study sample.

Administration and Ethical consideration:

The study protocol was approved by the researcher ethics committee at the Faculty of Nursing, Zagazig University. Each potential subject was informed about the nature, purpose, benefits of the study, and his or her participation was voluntary before giving verbal consent to participate. Anonymity of subjects was also assured through coding all data. The researcher assured that the data collected and information would be confidential and used only for the purpose of the study.

Statistical Analysis:

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows **(SPSS Inc., Chicago, IL, USA 2011)**. Quantitative data were expressed as the mean ± SD & median (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. Spearman's correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicated direct correlation & (-) sign indicated inverse correlation, also values near to 1 indicated strong correlation and values near 0 indicate weak correlation. All tests were two sided. P-value < 0.05 was considered statistically significant (S), P-value < 0.01was considered highly statistically significant, and p- value ≤ 0.05 was considered statistically insignificant (NS).

Results:

Table(1): Shows demographic characteristics of studied patients show , 64.7% of them had age < 40 years,

69.3% of them were males& almost of studied patients (91.3%& 95.3%)respectively were married and living in rural area . Moreover, 62.7% of studied patients educated & 57.3% of them had a work. In addition, about three quarters of studied patients (74.7% and 76.0%) respectively hadn't sufficient monthly income for their needs and were suffering from ACL for ≥ 2 years.

Table (2): Determines that total patients' knowledge about ACL injury ranged from 32 to 46 with Mean ± SD (40.8 ± 3.9). The total knowledge level was satisfactory among 73.3% of studied patients, while only 26.7% of them had unsatisfactory knowledge level.

Table (3): Determines that patients' total practice after ACL injury ranged from 27 to 55 with Mean ± SD (50.1±5.6). The total practice level was satisfactory among 94.0% of studied patients and unsatisfactory among 6.0% of patients.

Table (4): Detects that about two fifths (39.3%) of patients their Functional and physical needs affected after ACL injury .Also, 71.3% of studied patients their psychological needs were affected by the ACL injury, 72.7% of studied patients their socioeconomic needs were affected by the ACL injury and 82.0% of studied patients their spiritual needs were affected by the ACL injury. It is evident that those patients had psychological needs, socioeconomic needs and spiritual needs.

Figure 1: Determines that studied patients' overall needs were affected after ACL injury. As 88.7% of studied patients their needs were affected by the ACL injury, while only 11.3% of them not affected.

Table (5): shows statistically significant relations between patients' total needs level with their age (p=0.007), sex (p=0.02), education (p=0.001), occupation (0.001), monthly income (0.0001) and disease duration

(0.0001). It was apparent that educated, male patients, less than 40 years old, had high level of unaffected need compared to others. Similar findings establish for patients who had work with enough monthly income and suffered from disease for < 2 years.

Table (6): Defines that there was statistically significant relation between patients' total needs level and their total knowledge about ACL injury (p=0.007). This meaning that all patients who had unaffected needs level also had satisfactory level of knowledge about ACL injury.

Table (7): Clarifies that there was statistically insignificant relation between patients' tool needs level and their practice level p > 0.05.

Table (8): Illustrates that there was statistically significant positive correlation between patients' total level of knowledge with practice, needs, and age & disease duration per years. Also, there was statistically significant positive correlation of patients' practice score with patients' need score .This meaning that increase value of knowledge score associated with increases value of other studied parameters. Contrary there was statistically significant negative correlation of patients' practice score and patients' needs score with patients' age, and disease duration per years.

Discussion:

Regarding demographic characteristics of studied patients, the current study found that slightly less than two thirds of the studied patients their age was less than 40 years old. This result is in agreement with **Ramadan et al. (12),** who found in the thesis entitled **"**Role of Magnetic Resonance Imaging in Assessment of Anterior Cruciate Ligament Post-Grafting Cases in Terms of Graft Integrity and Complications" at MRI unit of a private radiology center in New Cairo Hospital that 84.0% of studied patients had age less than 40 years old.

Regarding to study patients gender the findings of the present study revealed that, more than two thirds of studied patients were males. This finding is in same line with **Ramadan et al. (12),** who mentioned that, the majority of patients were males. But this result is in disagreement with **Siegel et al. (13),** who reported in the thesis entitled "Anterior Cruciate Ligament Injuries: Anatomy, Physiology, Biomechanics, and Management" that ACL injuries occured more commonly in women than in men due to a variety of anatomical factors.

Regarding to social status, this study showed that almost all patients were married. This finding is in agreement with **Ibrahim et al (14),** who mentioned in the thesis entitled "Effect of Exercises Program on Knee Functional Outcomes for Patients after Arthroscopic Anterior Cruciate Ligament Reconstruction" at the knee arthroscopic surgery and stadium injuries unit at Mansoura University Hospital as well as the knee surgery outpatient clinic for patients follow up, that more than half of patients in the studied groups were married. In contrast, it disagrees with **Magnussen et al(15),** who illustrated in the thesis entitled "Effect of High-Grade Preoperative Knee Laxity on Anterior Cruciate Ligament Reconstruction Outcomes" that most of their studied sample were unmarried.

Regarding to educational level, this study showed that the highest percentage of patients were educated. This finding is in agreement with **Crossley et al (16),** who mentioned in the thesis entitled "Return to sport matters-longer-term quality of life after ACL reconstruction in people with knee difficulties" that the most of patients were university educated. Also, **El-Kafafy& El-Hadary(17),** reported in thesis entitled "Effect of Nursing

Rehabilitation Program on knee function and functional status among patients after Anterior Cruciate Ligament (ACL) Reconstruction at El-Manial University Hospital", that the majority of participants were educated.

Regarding to occupation of studied patients, the current study showed that more than half of patients had a worke. This is in the same line with **Ibrahim et al [14]**, who revealed that mostly of patients were working job needed physical effort. Also **El-Kafafy and El-Hadary[17]** , who illustrated that the most subjects were farmer/ manual work.But, this result doesn't correspond with **Kanamoto et al[18]** , who reported in a study entitled "Anterior knee symptoms after double-bundle ACL reconstruction with hamstring tendon autografts: an ultrasonographic and power Doppler investigation. Knee Surgery, Sports Traumatology, Arthroscopy" that the majority of participants were not working.

Regarding to place of residence, this study showed that the most of patients were living in rural area. This is in agreement with **Kochhal et al [19]**, who reported in thesis entitled "Incidence of anterior cruciate ligament injury in a rural tertiary care hospital", that patients were suffering from road traffic accidents had the highest rate of development of ACL injury department, twisting injuries/trivial fall injuries/injuries from fall on ground were giving the second highest numbers of ACL injuries in rural population. In addition to, Men with 16-25 years of age were more prone to have ACL injury than women in rural population. But this is disagreement with **Harhaji et al[20]** , who found in the thesis entitled "Causes of anterior cruciate ligament injuries" that 88.0% of patients in urban area especially sportsmen, genetic predisposition and everyday therapy did not have a significant influence on getting injured.

In relation to studied patients' monthly income, the result of the present study revealed that, nearly three quarters of patients' monthly income was insufficient. This finding is in agreement with **Davies et al[21]**, who mentioned in thesis entitled " Comparison of the clinical and cost effectiveness of two management strategies (rehabilitation versus surgical reconstruction) for non-acute anterior cruciate ligament (ACL) injury: study protocol for the ACL SNNAP randomized controlled trial" that the majority of patients' monthly income is insufficient.

Regarding to the disease duration per years, the result of present study showed that more than three quarters of patients' disease duration was more than or equall two years. This result is agreement with **Christopher & Timothy [22]**, who reported in the thesis entitled "Should return to sport be delayed until two years after anterior cruciate ligament reconstruction? Biological and functional considerations" that the majority of patients' disease duration was more than two years. On the other hand **Maradit [23]**, in the study entitled "Incidence of Anterior Cruciate Ligament Tears and Reconstruction: A 21-Year Population-Based Study", showed that the majority of patients' had disease duration more than two years.

Regarding to overall studied patients' knowledge about ACL injury and ACLRS, the current study result revealed that more than two thirds of them had satisfactory knowledge level. This is agreement with **Iriuchishima et al. [24]**, who reported in study entitled " Evaluation of ACL mid-substance cross-sectional area for reconstructed autograft selection" that more than two thirds of studied patients had satisfactory knowledge regarding ACL injury . While ,this finding is in disagreement with **Kiapour & Murray[25]** , who mentioned that total satisfactory knowledge was one half of studied patients in the study entitled "

Basic science of anterior cruciate ligament injury and repair ".

Regarding to overall patients' practice after ACL injury, the most of them in the present study had satisfactory practice level. This is agreement with **Hewett et al [26]**, who reported in their study entitled "Current concepts for injury prevention in athletes after anterior cruciate ligament reconstruction " that most of studied patients had satisfactory practice after ACL injury . While ,this finding is in disagreement with **Musahl [27]**, who mentioned that total satisfactory practice was among more than half of studied patients in the study entitled "New trends in ACL research " .

Regarding to overall studied patients' needs after ACL injury, the present study result displayed that the majority of the studied patients' needs were affected .This is agreement with **Murray et al[28]**, who reported in study entitled "Does anterior cruciate ligament reconstruction lead to degenerative disease?" that the majority of studied patients' their needs were affected after ACL injury .

While ,this finding is in disagreement with **Sonnery-Cottet &Chambat [29]**, who mentioned that one half of studied patients their needs were affected after ACL injury in the study entitled "Arthroscopic identification of the anterior cruciate ligament posterolateral bundle " .

Regarding relation between patients' total needs level and their demographic characteristics. The current study revealed that there was statistically significant relation between patients' total needs and patient's age, sex, education, occupation, monthly income and disease duration. This result is in agreement with **Alejandro et al. [30]**, who found a significant relation between patients' needs and demographic characteristics in the study entitled "The effect of socioeconomic status on the choice of treatment for patients with cruciate ligament injuries in the knee".

As regards the relation between patients' total needs level and their knowledge. The current study results revealed that there was statistically significant relation between patients' total needs level and their total knowledge. this finding is in agreement with **Sevani et al [31]**, who reported in his study entitled "Physical, psychological and social impact of cruciate ligament injuries on adults" that there was significant relation between patients total needs and their knowledge. On the other hand, the current study is in disagreement with **Singh[32]**, who couldn't found any relation between patients total needs and their knowledge in the study entitled "Awareness toward Anterior cruciate ligament injury among population"

Regarding relation between patients' total needs level and their practice level. The results of the present study revealed that there was statistically insignificant relation between patients' total needs and their practice level. This result is in agreement with **Mandeep et al [33]**, who found insignificant relation between patients' total needs and their practice , in the study entitled "Individuals experiences of the consequences of Anterior cruciate ligament Reconstruction surgery" While, the current study result is in disagreement with **El-kafafy et al [17]**, who found a significant relation between patients' total needs and their practice in a study entitled "Effect of Nursing program on knee function and functional status among patients after anterior cruciate ligament at Elmanial university hospital" .

Conclusion:

In the light of main study findings, it can be concluded that slightly less than three quarters of studied patients had total satisfactory

knowledge regarding ACL knee injury. Furthermore, the current study concluded that almost of studied patients had satisfactory total practice after ACL injury. Also, it was concluded that the majority of studied patients' total needs were affected by anterior cruciate ligament injury, while only less than one fifth were not affected by ACL injury.

Recommendation:

Based on the current of study the following recommendations were suggested:

- Educational guidelines covering comprehensive care about ACL

injury should be available in orthopedic department and outpatient clinic for patients to manage their needs.

- Provision training courses and rehabilitation programs with multidisplinary teams for patients with ACL injury to help them meeting their needs.

- Further studies are recommended to identify effects of educational programs on fulfill needs of patients with ACL injury

Table 1: Frequency and percentage distribution of demographic characteristics of patients with anterior cruciate ligaments injury (n=150):

demographic items	No.	%
Age :	97	64.7
• < 40	53	35.3
• ≥ 40	37 ± 7.7	
• Mean ±SD	36 (22 – 50)	
• Median (range)		
Sex:		
• Males	104	69.3
• Females	46	30.7
Social status:		
• Unmarried	13	8.7
• Married	137	91.3
Education level:		
• Educated	94	62.7
• Uneducated	56	37.3
Occupation:	64	42.7
• Doesn't work	86	57.3
• Work		
Residence:		
• Rural	143	95.3
• Urban	7	4.7
Monthly income:		
• Insufficient	112	74.7
• Sufficient	38	25.3
Disease duration per years:		
• < 2	36	24.0
• ≥ 2	114	76.0

Table 2 : Frequency and percentage distribution of patients' total knowledge about anterior cruciate ligament injury (n = 150):

Patients' total knowledge	Total Satisfactory knowledge ≥ 60.0%	
	No.	%
- Satisfactory	110	73.3
- Unsatisfactory	40	26.7
Mean ± SD	40.8 ± 3.9	
Median (Range)	41 (32 - 46)	

Table 3: Frequency and percentage distribution of patients' total practice after ACL injury (n = 150):

Patients' total practice after ACLRS (55)*	Total Satisfactory practice ≥ 60.0%	
	No.	%
- Satisfactory	141	94.0
- Unsatisfactory	9	6.0
Mean ± SD	50.1 ± 5.6	
Median (Range)	52 (27 – 55)	

Table 4: Frequency and percentage distribution of patients' total needs score after ACL injury (n = 150):

Total needs items	Unaffected < 60.0%		Affected ≥ 60%	
	No	%	No	%
Patients' physical and functional needs	91	60.7	59	39.3
Patients' psychological needs	43	28.7	107	71.3
Patients' socioeconomic needs	41	27.3	109	72.7
Patients' spiritual needs	27	18.0	123	82.0

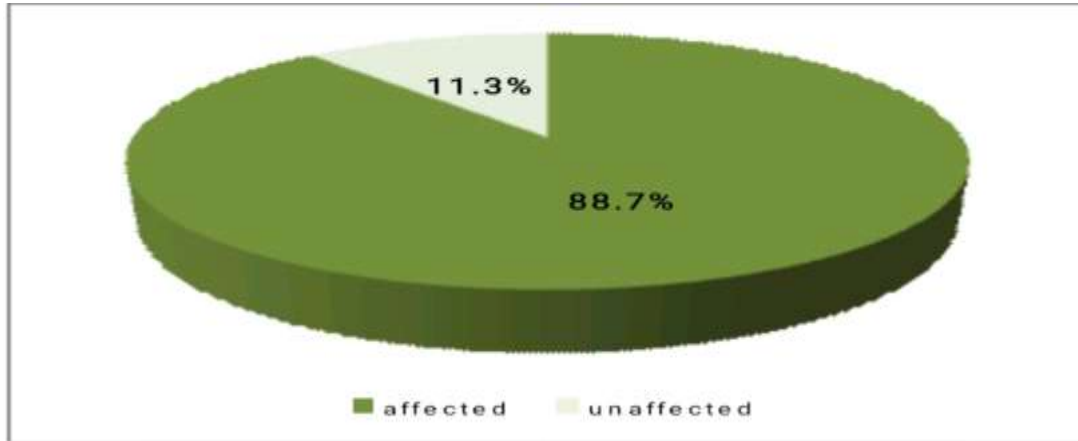**Figure 1: Studied patients' total needs after ACL injury (n = 150(**

Table 5: Relation between Patients' needs level after ACL injury and their demographic characteristics (n=150):

Demographic characteristics	Patients' needs level					p-value
	Unaffected < 60% n= 17		Affected ≥ 60% n= 133			
			X^2			
	No.	%	No.	%		
Age per years:						
• <40	16	16.5	81	83.5	7.3	0.007*
• ≥.40	1	1.9	52	98.1		
Sex:		.		.		
• Male	16	15.4	88	84.6	5.5	0.02*
• Female	1	2.2	45	97.8		
Social status:		.		.		
• Unmarried	3	23.1	10	76.9	f	0.17
• Married	14	10.2	123	89.8		
Education:		.		.		
• Uneducated	0	.0	56	100.0	11.4	0.001*
• Educated	17	18.1	77	81.9		
Occupation:		.		.		
• Doesn't work	1	1.6	63	98.4	10.6	0.001*
• Works	16	18.6	70	81.4		
Residence:		.		.		
• Rural	16	11.2	127	88.8	f	0.58
• Urban	1	14.3	6	85.7		
Monthly income:		.		.		
• Insufficient	0	.0	112	100.0	f	0.0001*
• Sufficient	17	44.7	21	55.3		
Disease duration:		.		.		
• <2	15	41.7	21	58.3	f	0.0001*
• ≥2	2	1.8	112	98.2		

f=Fisher exact test of significant   *significant p<0.05

Table 6: Relation between patients' total needs level and their knowledge level (n=150):

knowledge dimensions	Patients' needs level				ᶠ p-value
	Unaffected < 60% n=17		Affected ≥ 60% n=133		
	No.	%	No.	%	
Patients' knowledge about ACL injury:					-
• Satisfactory	0	0.0	0	0.0	
• Unsatisfactory	17	100.0	133	100.0	
Patients' knowledge about ACLRS:					
• Satisfactory	17	100.0	130	97.7	0.99
• Unsatisfactory	0	0.0	3	2.3	
Patients' total knowledge:					
• Satisfactory	17	100.0	93	69.9	0.007*
• Unsatisfactory	0	0.0	40	30.1	

f=Fisher exact test of significant   *significant p<0.05

Table 7: Relation between Patients' total needs level and their practice level (n=150):

Practice dimensions	Patients' needs level				ᶠ p-value
	Unaffected< 60% n=17		Affected ≥ 60% n=133		
	No.	%	No.	%	
Patients' practice of exercises:					0.27
• Satisfactory	15	88.2	126	94.7	
• Unsatisfactory	2	11.8	7	5.3	
Patients' practice of weight-bearing:					
• Satisfactory	15	88.2	112	84.2	0.99
• Unsatisfactory	2	11.8	21	15.8	
Patients' wearing of a knee brace or holder:					
• Satisfactory	15	88.2	114	85.7	0.99
• Unsatisfactory	2	11.8	19	14.3	
Patients' total practice level:					
• Satisfactory	15	88.2	126	94.7	0.27
• Unsatisfactory	2	11.8	7	5.3	

F = Fisher exact test of significant   non significant p>0.05

Table 8: Correlation matrix between the studied patients total level of knowledge ,. Practice , Needs , Age and Diseases duration (n=150):.

	Patients' knowledge score		Patients' practice score		Patients' needs score	
	r	P	R	P	R	p
Practice score	0.44	0.0001*				
Needs score	0.38	0.0001*	0.41	0.0001*		
Age per years	0.37	0.0001*	-.0.29	0.0001*	- 0.53	0.0001*
Disease duration	0.031	0.71	- 0.17	0.041*	- 0.23	0.002*

(r) Correlation coefficient   * significant p < 0.05.

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