

Effect of nursing educational program on nurses' knowledge and practice regarding patients with anterior cruciate ligament surgery at Assiut university hospital

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Abstract:

Background: Anterior cruciate ligament (ACL) surgery is one of the most common clinical entities in daily orthopedic practice. Nurses should develop their own knowledge and quality of nursing care that are needed to practice safely with patients post ACL surgery. **Aim of the study:** was to evaluate the effect of nursing educational program on nurse's knowledge and practice regarding patients with anterior cruciate ligament surgery. **Subjects & methods:** **Research design:** Quasi experimental research design was utilized in this study. **Setting:** This study was conducted in arthroscopy and sports injuries unit at orthopedic department at Assiut University Hospital. **Subjects:** A convenient sample of 44 nurses was included in this study. **Tools of data collection:** Data collected by utilizing the designed interview questionnaire sheet consists of biosocial characteristics of nurses and assessment of nurses' knowledge, observation checklist sheet consists of nurses' practice and instructions. **Results:** The results can be concluded that 93.2% of nurses had a poor level of knowledge regarding ACL with Mean \pm SD (7.57 \pm 2.73). All of nurses (100%) had an inadequate level practice regarding care for patients post ACL surgery with Mean \pm SD (133.07 \pm 30.60). It was found that there was a strong relationship ($r = .838$, $P = .0001$) between total knowledge score and total practice score regarding care for patients post ACL surgery. **Conclusion:** it can be concluded that, Nurses' knowledge and practice regarding ACL surgery in orthopedic department of Assiut University Hospitals improved. **Recommendations:** Continuous education and in-service training programs, encouraging nurses to read textbooks and periodicals and to attend scientific meeting and conferences and similar studies on a larger sample acquired from different geographical areas in Egypt should be done to achieve more generalizable results are recommended.

Key words: Effect; Educational program; Anterior cruciate ligament.

Introduction:

The ACL is an important ligament for proper movement .ACL injury more commonly causes knee instability than does injury of other knee ligaments. ⁽¹⁾ An estimated 200,000 ACL-related injuries occur annually in the United States. ⁽²⁾ In the last year (from 1/1/2011 – 1/1/2012), approximately 247 cases admitted to the orthopedic department of Assiut University Hospital. ⁽³⁾

There are many ways the ACL can be torn, the most prevalent is when the knee is bent too much toward the back and when it goes too far to the side .Tears in the ACL ligament often take place when the knee receives a direct impact from the front of the thigh while the leg is in a stable position, for example a standing football player is tackled sideways when his feet are firmly planted. ⁽⁴⁾

An ACL tear can be diagnosed by a popping sound heard after impact, swelling after a couple of hours, severe pain when bending the knee, and when the knee buckles or locks during movement or gives way while standing still with weight on the affected knee. ⁽⁵⁾

The pivot-shift test, anterior drawer test and the Lachman test are used during the clinical examination of suspected ACL injury. The ACL can also be visualized using a magnetic resonance imaging scan. ⁽⁶⁾

Treatment for ACL rupture may be conservative or surgical. Conservative management often includes physical therapy and using a knee brace. For patients who frequently participate in such sports, surgery is often indicated. ⁽⁷⁾

ACL reconstruction surgery is

generally safe. Complications that may arise from surgery or during rehabilitation and recovery include, infection in the knee this can be superficial or deep, haemarthrosis (bleeding into the knee), blood clots (deep venous thrombosis), stiffness in the knee (arthrofibrosis) is very uncommon with ACL reconstruction surgery, neurovascular injury (damage to nerves and blood vessels), rupture or stretching of the reconstructed ligament, causing recurrent instability, fixation device problems are rare, fracture through the bone tunnels, frontal knee pain and tunnel widening.⁽⁸⁾

Nursing care is playing an important role in the health care system. changes in the health care brought about by scientific developments have and will continue to greatly influence the education, theory and practice of nursing as in other health professions.⁽⁹⁾ Nursing, therefore, must continue to examine its practice in the face of these developments in order to ensure that its practice is in consonance with global nursing standards and the satisfaction of its patients in order to maintain its relevance in the healthcare industry and the society.⁽¹⁰⁾

ACL injury severely limits knee movement and can affect daily activities and quality of life so, the nurse should develop their own knowledge and quality of care to help this patient to improve the patients` condition, reducing or preventing postoperative complications, and improve patients` general health.⁽¹¹⁾

Significance of study:

The anterior cruciate ligament (ACL) is one of most common ligaments to be injured. In the last year (from 1\1\2011 – 1\1\2011), approximately 247 cases admitted to the orthopaedic department at Assiut University Hospital.⁽³⁾ A torn ligament severally limits knee movement and can affect daily activities and quality of life. This study will help such group of patients to develop nursing care standards; furthermore, result of this

study could be helpful for health professionals specially nurses in planning and implementing nursing care programm for such a group of patients.

Aim of the study:

The aim of the current study was to evaluate the effect of nursing educational program on nurses' knowledge and practice regarding patients with anterior cruciate ligament surgery.

Research hypothesis:

To fulfill the aim of the study, the following research hypotheses were formulated:

1. The post mean knowledge scores of nurses are higher than pre mean knowledge scores.
2. The post mean practice scores of nurses are higher than pre mean practice scores.
3. The incidence of postoperative complications for patients who had anterior cruciate ligament reconstruction cared by nurses after postoperative care implementation is less than that pre implementation.
4. A positive relationship is existing between knowledge and practice score obtained by nurses who had developed postoperative care.

Subjects and Methods:

Research design:

A quasi experimental research design was utilized.

Study setting:

The study was conducted in the unit of Arthroscopy and sport injuries in Assiut University Hospital.

Study sample:

A convenience sample of all available nurses (44) working in orthopedic surgery department and who are willing to participate in this study.

Tools of data collection:

Two tools used for data collection included:

Tool (I): Interview questionnaire sheet: It was designed by the researcher based on current and

international literature to assess nurses' knowledge regarding ACL injury and it consists of two parts:

- **Part (1):** Socio-demographic characteristics of nurses: it includes age, gender, marital status, qualification, years of experience, and previously attended training programs about ACL injury.
- **Part (2):** assessment of nurses' knowledge: it includes definition, causes, immediate signs, immediate treatment of ACL injury, complication, nursing care, instruction after ACL injury.

Tool (II): An observation checklist sheet: It was designed by the researcher after reviewing of literature to assess nurses' practice. It will include two parts:

- **Part (1):** nurses' practices: it includes vital signs, neurovascular assessment, CPM device, ROM exercise.
- **Part (2):** instructions: it includes information about crutches, cold application, knee brace, knee immobilizer, possible complication, post-operative instruction.

Scoring system:

For interview questionnaire: the total scores of questionnaire 27 grades, one grade was given for the correct answer and zero for the incorrect answer. Those who obtained less than (50%) were considered having poor level. (50%) were considered having satisfactory level and above were considered having good level.

For observation checklist: the total scores of performance checklist 480 grades, Those who obtained less than (50%) were considered having inadequate level. Above (50%) were considered having adequate level.

Validity and Reliability:

It was done by five experts from the three medical staff and two medical – surgical nursing staff. Both tools were tested using test retest.

Pilot study:

It was conducted on 10% of sample .The purpose of the pilot study

was to detect any particular problem in the statements clarity, feasibility, and applicability of the tool. The data obtained from the pilot study were analyzed; no change was done in the assessment sheet, so the 10% of subjects selected for the pilot study were included in the main study.

Field work:

The study was executed on three phases:

- **Phase (1): Preparatory phase:** After reviewing the related literature tools for data collection were developed. Validity of tools was done by 5 experts. By the end of this phase, a pilot study was carried out on 10% of sample to test the feasibility of the study and applicability of the tools, and the time needed to complete the tool was 15 minutes.
- **Phase (2): Implementation phase:** Data collection was carried out from February, 2012 till May, 2012. The researcher prepared the training places, teaching aids and media (pictures, PowerPoint, handouts). This was followed by arranging for the education schedule based on the contents of program number of staff involved, time availability, shifts as well as the resources available. The interview questionnaire sheet was filled by the researcher while the nurses were on duty; purpose of the study was explained prior to get the questionnaire' questions asked. Each nurse involved in the study was interviewed to answer the questionnaire' questions. Then, the nurses were divided into 4 groups on 4 sessions each session takes about 30- 45 minutes to be filled depending on the degree of understanding and response of the nurses. Observation checklist for nurses carried out during the morning and afternoon shift.
- **Phase (3): Evaluation phase:** Immediately after implementation of educational program .The nurses` knowledge and practice has been evaluated by the researcher through filling the tool (I and II).

Administrative and ethical considerations:

An official letter was issued from the Dean of the Faculty of Nursing to the Head of orthopedic surgery department and the head of arthroscopy and sports injury unit at Assiut University Hospital to collect the necessary data, and explain the aim and contents of the study to nursing supervisors and physicians to gain their cooperation and allow the release of nurses to attend the education during minimal workload activities. Also the meetings with the nurses to explain the objectives and contents of this study and obtain informed consent. Informed consent was obtained from nurses and patients who are willing to participate in the study after explanation of the nature and purposes of the study. Confidentiality of the subjects was certainly assured.

Statistical analysis:

The collected data were coded then transformed into specially designed form so as to be suitable for entering into IBM compatible computer. All entered data were verified for any errors using Statistical Package for Social Sciences (SPSS) version 16 for windows. Descriptive statistics as number, percentage, mean and standard deviation. Data were collected, tabulated and statistically analyzed using Chi-square test, t-test, and ANOVA test. Correlation coefficient (r) was calculated between continuous variables.

Results:

Table (1): Shows that mean of age of nurses was (33.20 ± 9.26), more half of nurses were <30 years old, female, married, nursing diploma, and <10 years of experience .Finally this table discuss that all of nurses (100%) not attending any previous training program about anterior cruciate ligament injury.

Table (2): Displays that a significant difference between nurses' knowledge and total knowledge score was found (p-value <0.001.)

Table (3): Presents a highly significant difference between nurses' practice in relation to total practice score with p- value <0.001.

Table (4): Shows that significant difference between practice of control and study group (P<0.001). There has been observed that all control group (100%) have inadequate level of practice and (86.4%) of study group has adequate level of practice.

Table (5): Shows that the 6.8 % of control group knowledge were satisfactory, 93.2 % were poor. While study group knowledge were 68.2 % good, 29.5 were satisfactory, 2.3 % were poor.

Figure (1): Displays correlation between nurses' score of knowledge and score of practices. There has been observed that have high score of practice and knowledge.

Discussion:

ACL injury severely limits knee movement and can affect daily activities and quality of life so; the nurse should develop their own knowledge and quality of care to help this patient to improve the patients' condition, reducing or preventing postoperative complications, and improve patients' general health. ⁽¹¹⁾

The aim of the study was to evaluate the effect of nursing educational program on nurse's knowledge and practice regarding patients with anterior cruciate ligament surgery.

The results of the present study showed that more than half of nurses were female, married, aged from 19 - 29 years. Nursing diploma was the highest proportion, more than half of them have an experience less than ten years and all of them have no in service training courses related to anterior cruciate ligament injury. Bahza⁽¹²⁾ agree with this study findings " the majority of the nurses were married, female, nursing a diploma the highest proportion, years of experiences more than 3 years, Mostafa ⁽¹³⁾ found that the majority of the nurses their ages ranged from 20-

< 30 years, married, female, and have diploma of nursing their experiences range from 5 to 10 years.

This result is in agree with Ahmed⁽¹⁴⁾ who conducted a study reveal that most of nurses had unsatisfactory level of knowledge before implementation of designed programme.

This result also disagreed with Mostafa⁽¹³⁾ who conducted a study illustrated that more than two third of nurses had fair level of knowledge and minority of nurses had poor level of knowledge pre implementing designed programme.

In my opinion poor level of knowledge in this study due to. books that were given to the nurses during their secondary learning years were taken from them at the end of years and there is no Arabic source for updating and continuing their education. Also this may be attributed to lack of continuous education and absence of in-service training program.

In present study after implementation of the designed programme, more than half of nurses' knowledge was improved. This improvement might be related to the fact that all nurses have a strong desire to learn new knowledge. Ahmed⁽¹⁴⁾ found that great improvement in knowledge occur after implementation of designed programme.

The current study showed inadequate total practice scores in all items pre implementation designed programme. Ahmed⁽¹⁵⁾ found that all nurses have inadequate practice pre implementation designed programme.

The finding of the present study showed that practice was improved after application of designed programme. Youssef⁽¹⁶⁾ in the same line with the current study findings revealed that an improvement in nurse's practice after the attendance at continuing nursing education sessions. However, Hassan⁽¹⁷⁾ was disagree with the current study and revealed that the most nurses had

adequate practice in pre and post implementation designed nursing protocol (85.7 % and 100%) respectively. Elmasry⁽¹⁸⁾ in the same line with the current study illustrated that practice obtained by nurses after application of designed nursing protocol were improved.

Conclusion:

Based on the result of the present study, it can be concluded that, Nurses' knowledge and practice regarding ACL surgery in orthopedic department of Assiut University Hospitals improved. The incidence of postoperative complications for patients who had anterior cruciate ligament reconstruction cared by nurses improved after postoperative care implementation by nurses who had developed postoperative care post education program.

Recommendations:

Based on the finding of the present study, following recommendations were made:

- Continuous education and in-service training programs should be conducted at orthopedic department to improve nurses' knowledge and practice.
- Nurses should be encouraged to read textbooks and periodicals and to attend scientific meeting and conferences.
- Similar studies on a larger sample acquired from different geographical areas in Egypt should be done to achieve more generalizable results.

Table (1): Distribution of study sample according to socio demographic characteristics of nurses

Variables	No. (n= 44)	%
Age: (years)		
▪ < 30	17	38.6
▪ 30 - < 40	15	34.1
▪ ≥ 40	12	27.3
Mean ± SD (Range)	33.20 ± 9.26 (19 – 54)	
Sex:		
▪ Male	8	18.2
▪ Female	36	81.8
Marital status:		
▪ Single	8	18.2
▪ Married	35	81.8
▪ Divorced	1	2.3
Qualification:		
▪ Nursing diploma	34	77.3
▪ Technical Nursing Institute	7	15.9
▪ Nursing Bachelor	3	6.8
Years of experience:		
▪ < 10 years	17	38.6
▪ 10 - < 20	15	34.1
▪ ≥ 20	12	27.3
Previously attended training programs about ACL injury:		
▪ Yes	0	0
▪ No	30	100

Table (2): Distribution of study sample according to total mean score of control and study group (n=44)

Nurses` knowledge	Control group	Study group	P-value
	X + S.D	X + S.D	
	7.57 ± 2.73	18.86 ± 2.34	0.100*

Table (3): Distribution of study sample according to total mean scores of control and study group (n= 44)

Nurses` practice	Mean + SD		P-value
	Control group	Study group	
	133.07 ± 30.60	331.95 ± 25.87	0.001*

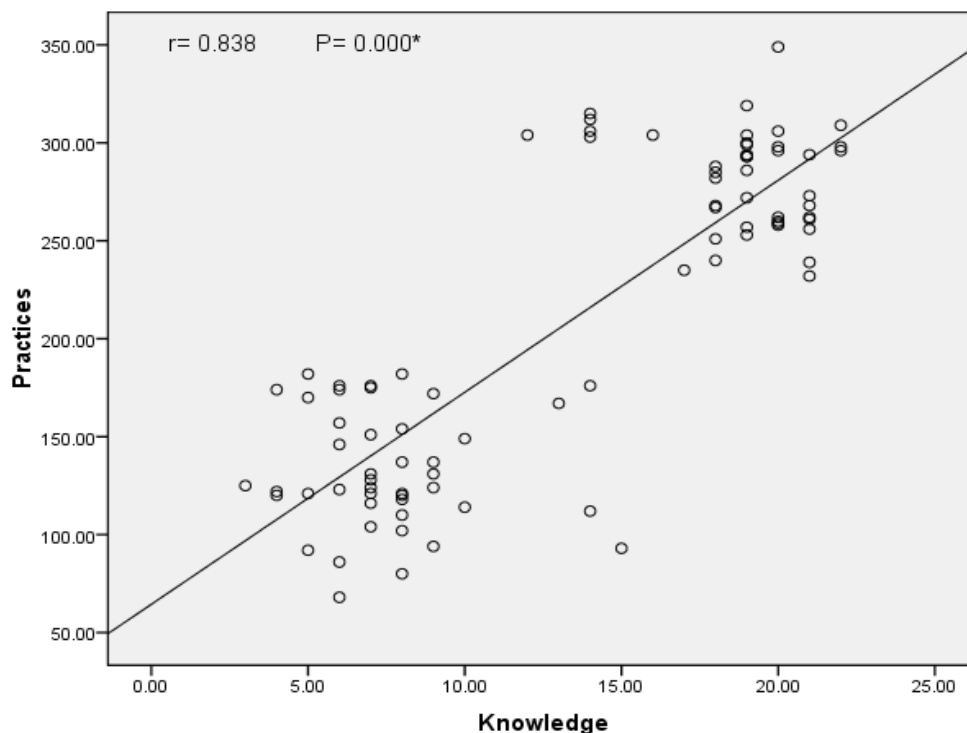
Table (4): Distribution of study sample according to the level of nurses' practice for control and study group post program (n= 44)

Practices	Control group (n= 44)		Study group (n= 44)		P-value
	No.	%	No.	%	
▪ Adequate	0	0.0	38	86.4	0.001*
▪ Inadequate	44	100.0	6	13.6	

Table (5): Distribution of study sample according to the level of knowledge for control and study group post program (n= 44)

Knowledge	Control group (n= 44)		Study group (n= 44)		P-value
	No.	%	No.	%	
Good	0	0	30	68.2	0.001*
Satisfactory	3	6.8	13	29.5	
Poor	41	93.2	1	2.3	

Chi-square test

* Statistical significant difference ($P < 0.05$) - = Not Applicable**Figure (1): Correlation between nurses' score of knowledge and score of practices**

References:

1. Arnheim S.A., Prentice C.A., Anderson R.S., Hall J.S. & Martin L.S.: Brief Overview of Anatomy and Physiology of the Knee. 2011. Available at: <http://factotem.org/library/database/Knee-Articles/Knee-anatomy-physiology.shtml>. Retrieved October, 2011.
2. Brophy RH. Wright RW. & Matava MJ.: Cost analysis of converting from single-bundle to double-bundle anterior cruciate ligament reconstruction. *Am J Sports Med.* 2009 Apr; 37 (4): 683-7
3. Assiut University Hospital Record. Orthopedic department, Arthroscopy and sports injuries unit; 2011-2012.
4. Langran SH.: Alpine Skin Injuries. Ski-Injury.com. Available at: <http://www.ski-injury.com/specific-sports/alpine>. Retrieved 5 December , 2010
5. Amy E. & Micheo W.: Anterior cruciate ligament tear. Essentials of Physical Medicine and Rehabilitation. 2nd ed. Philadelphia, Pa: Saunders Elsevier. 2010;pp.54-55.
6. Guillodo Y., Rannou N., Dubrana F., Lefèvre C. & Saraux A.: Diagnosis of anterior cruciate ligament rupture in an emergency department. *J Trauma.* Nov 2008; 65(5):1078-82.
7. International society for Knee Sprain. Available at: <http://pediatrics.med.nyu.edu/conditions-we-treat/conditions/knee-sprain-assessed>. Retrieved 17July. 2011.
8. Amy A.: preoperative nursing assessment of the surgical patient. *Nursing clinical of North America*, 2006: 41(2): 135-150.
9. American association of neuroscience nurses, neuroscience nursing: scope and standards of practice, 4th ed., 2012 p.7-23
10. Ijeoma E.O. & Ada N. & Peace I.& Akpati V.: Helpless patients ' satisfaction with quality of nursing care in Federal tertiary hospitals , Enugu , Southeast , Nigeria. *International Journal*; 2011: 6-13
11. Taylor C.: *Fundamentals of Nursing: The Art and Science of Nursing Care*, 6th ed., Philadelphia: Lippincott Williams and Wilkins, 2008.
12. BahzaN. M.: Developing nursing care standards for patient with colostomy at Assiut University Hospital. Master thesis, Medical Surgical Nursing, faculty of nursing, Assiut University. 2013: pp.57-58.
13. Mostafa M.: Developing standards of post-operative nursing interventions for lower limb amputated patients. *Assiut journal of faculty of nursing.* 2012; 1 (33):22-33.
14. Ahmed R.A.: Developing nursing care standards for patient with chronic subdural haematoma at Assiut University Hospital. Master thesis, Medical Surgical Nursing, faculty of nursing, Assiut University.2011; pp.57-58.
15. Ahmed G.H.: Effect of designed nursing protocol on nurses' knowledge and practice regarding haemodialysis patients at Assiut University Hospital. Master thesis, Medical Surgical Nursing, faculty of nursing, Assiut University. 2011; pp.57-58.
16. Youssef S.S.: Micro vascular free tissue transfer surgeries, Impact of a designed teaching protocol on nurse's knowledge, practices and patient's outcome. Doctorate thesis, Medical Surgical Nursing, faculty of nursing, Assiut University.2007; pp45-45
17. Hassan G.H.: Effect of designed nursing protocol on nurses' knowledge and practice regarding haemodialysis patient at Assiut University Hospital. Master thesis, Medical Surgical Nursing, faculty of nursing, Assiut University.2011; p58.
18. Elmasry M.A.: Effect of designed nursing protocol on nurses' knowledge and practice regarding epileptic patient at Assiut University Hospital. Master thesis, Medical Surgical Nursing, faculty of nursing, Assiut University.2012; pp: 80-83.

تأثير برنامج العناية التمريضية على معلومات ومهارات الممرضات على مرضى عملية القطع في الرباط الصليبي الأمامي بمستشفى جامعة أسيوط

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مقدمة :

يوجد الرباط الصليبي الأمامي في منتصف الركبة وهو واحد من أربع أربطة هامة تحافظ على ثبات المفصل إلا أنه أكثرهم عرضة للإصابة . وقد يكون القطع في الرباط الصليبي جزئي أو كلي . وتقدر نسبة الإصابة بحوالي ٢٠٠ ألف حالة سنويا في الولايات المتحدة الأمريكية . وأكثر حالات الإصابة بين الأفراد الذين تتراوح أعمارهم بين ١٥ إلى ٢٥ عام ويشاركون في الرياضة مثل الففز والتجديف . أما بالنسبة للعلاج قد يكون طبي أو جراحي. العلاج الطبي يتضمن إعطاء المريض أدوية مسكنة ومضادة للالتهاب وينصح المريض بالراحة وعدم الحركة قدر الإمكان ، ويستعمل رباطا على الركبة . وقد تحتاج الإصابة إلى تدخل جراحي ويتم إعادة بناء الرباط الصليبي باستخدام جزء من الأنسجة المحيطة بالركبة. أما بالنسبة للعناية التمريضية لمرضى قطع الرباط الصليبي الأمامي بعد الجراحة بواسطة منظار المفاصل فهي تشمل متابعة العلامات الحيوية، الغيار على الجرح ، تعليم المريض كيفية استخدام العكازات وأرتداء الركبة المطاطية ، عمل تمارين الثبات وتقوية العضلات .

النتائج :

- أوضحت الدراسة أن غالبية هيئة التمريض في المرحلة العمرية من ٢٠ - ٣٠ عام وإن حوالي ٧٧,٣% منهن حاصلات على دبلوم تمريض.
- وجد أن ٣٨,٦% من الممرضات لديهن خبرة أقل من عشرة سنوات وأن ٣٤,١% لديهن خبرة أكثر من عشرة سنوات وأن ٢٧,٣% لديهم خبرة أكثر من عشرين سنة بالإضافة الى أن جميعهن لم يحصلون على دورات تدريبية خاصة بهذا الموضوع.
- أن نسبة ٩٣,٢% من الممرضات لديهن مستوى منخفض في المعلومات بينما جميعهن لديه مستوى غير كافي في المهارات الخاصة بالعناية بمرضى قطع الرباط الصليبي بعد الجراحة.
- لا توجد علاقة ذات دلالة إحصائية بين المهوّل الدراسي و معلومات هيئة التمريض قبل تطبيق برنامج العناية التمريضية بعد الجراحة.
- وجدت فروق ذات دلالة إحصائية عالية في متوسط الدرجات الكلية للمعلومات لهيئة التمريض عن برنامج العناية التمريضية للمرضى الذين أجريت لهم عملية إعادة بناء الرباط الصليبي قبل وبعد تطبيقها مباشرة

الهدف من الدراسة :

تقييم مدى تأثير برنامج تعليمي تمريضي على معلومات ومهارات الممرضات على مرضى عملية القطع في الرباط الصليبي الأمامي.

التصميم البحثي:

تم استخدام تصميم شبه تجريبي.

مكان و عينة الدراسة :

تم جمع العينة (٤٤ ممرضة) من قسم جراحة العظام بمستشفى أسيوط الجامعي

أدوات جمع البيانات :

تم استخدام ادوات البحث الاتية:

١. استمارة أستبيان عن معلومات هيئة التمريض.
 ٢. استمارة ملاحظة لأداء هيئة التمريض.
- برنامج تعليمي تمريضي

الخلاصة :

يمكن استنتاج أن معلومات ومهارات الممرضات قبل البرنامج تجاه مرضى قطع الرباط الصليبي بعد الجراحة كانت غير مرضية كما سجلت الدراسة وجود فروق ودلالة إحصائية بتحسّن معلومات ومهارات التمريض بعد تطبيق البرنامج

التوصيات :

الاهتمام بالبرامج التدريبية و التعليم المستمر للممرضات ، وتشجيعهن على قراءة الكتب والدوريات وحضور الاجتماعات والمؤتمرات العلمية وتطبيق دراسات مماثلة على عينة أكبر في مناطق جغرافية مختلفة في مصر لتحقيق المزيد من التعميم للنتائج.