

## Effect of Educational Nursing Program on Improving Knowledge and practice for Patients Undergoing Total Hip Replacement.

Eman Mawed Fahim, Ahmed Ahmed Nabawy, Shalbia El Sayed AboZead & Sahra Zaki Azer<sup>4</sup>

Assistant Lecturer Medical-Surgical Nursing, Faculty of Nursing, Beni Suif University, Egypt.

Prof. of Orthopedic Surgery, Faculty of Medicine, Cairo University, Egypt.

Prof. of Medical, Surgical Nursing, Faculty of Nursing, Assiut University, Egypt.

Lecturer of Adult Nursing, Faculty of Nursing, Assiut University, Egypt.

### Abstract

**Aims:** To assess the patient's knowledge about total hip replacement (THR) and exercises, designing educational nursing program for patients undergoing THR, and to assess the effect of educational nursing program on patients knowledge; **Research design:** Quasi-experimental design was utilized in this study; **Setting:** Orthopedic surgery department and outpatient clinic at Red Crescent Hospital - Cairo; **Sample:** 60 adult patients, their age between 18 – 65 years, both males and females. Divided into two groups (study group 30 and control group 30). The study group was received educational nursing program, while the control group was received routine hospital care; **Tools:** A structured interview questionnaire sheet it consists of two parts; **Results:** two thirds of the patients were in age group between 50-60 years (63.3%, 66.7% respectively) mean  $\pm$ SD were ( $51.7 \pm 6.2$  and  $52.6 \pm 6.6$  respectively) and two thirds of the patients were females in both study and control group (66.7%, 63.3% respectively). There were statistical significant difference between study and control groups post and follow up in all items of knowledge  $P < 0.001$  except definition of THR  $P > 0.005$  in follow up phases. **Conclusions:** There was statistical significant improvement of knowledge in patients who received the educational nursing program than those patients who didn't receive the program. **Recommendations:** Discharge planning and teaching booklet for patients, using illustrated pamphlets by images should be available for those patients who cannot read and write.

**Keywords:** Educational Nursing Program, Knowledge, Total Hip Replacement.

### Introduction

Hip replacement (HR) is a surgical procedure in which the hip joint is replaced by a prosthetic implant. The HR surgery can be performed as a total replacement or a hemi (half) replacement. Such joint replacement orthopedic surgery is generally conducted to relieve arthritis pain or in some hip fractures (Bozic, & Kurtz, 2010).

Total hip replacement (THR) is most commonly used to treat joint failure caused by osteoarthritis. Other indications include rheumatoid arthritis, vascular necrosis, traumatic arthritis, protrusio acetabuli, certain hip fractures, benign and malignant bone tumors, arthritis associated with Paget's disease, ankylosing spondylitis and juvenile rheumatoid arthritis (Sobieraj et al., 2012).

According to the Agency for Healthcare Research and Quality, more than 285,000 THR are performed each year in the United States. The incidence rate of 1 in 2, 2661 in the United States. In 2003 there were 200,000 THR performed and 100,000 partial hip replacements (American Academy of Orthopedic Surgeons, 2013).

Nurses play a vital role in the pre operative nursing care; complete physical examination included assessment of hip mobility, strength, and alignment, the muscular state (force, volume), range of motion

(ROM) and the circulatory state of the injured limb as well as the healthy limb. The general physical and psychological state of the patient should also be taken care of, for example explaining the surgical technique and the therapeutic monitoring after surgery can help lowering the patient's anxiety. Explaining how to use a rollator or walk on crutches properly (Van, & Zhang, 2010).

Frequent assessment of neurovascular status, assess both legs for color, warmth, capillary refill, movements and sensation, and reinforce the importance of ambulation to decrease the risk for post operative complications. Compare surgical leg with the unaffected lower extremity, report any deficit promptly, and ensure post operative position is maintained in accordance with specific hip precautions (Fevang, et al., 2010).

### The Aims of this study were to

Evaluate the effect of educational nursing program on improving patient undergoing THR knowledge through the following: 1-assess of the patients knowledge toward THR and exercises 2- developing and implementing educational nursing program for patients undergoing total hip replacement 3- to investigate the effect of implementing educational nursing program on improving knowledge for patients undergoing THR.

**Research hypothesis**

The knowledge of patients undergoing THR in the study group patients will be higher than the patients in control group.

**Research design**

Quasi-experimental study design was utilized in this study.

**The present study were portrayed under four main topics as following:** the technical design, the operational design, the administrative design, and the statistical design.

**Technical design:** The technical design of the study includes the setting, subjects, and tools used.

**Setting:**

The study was conducted, in orthopedic surgery department at Red Crescent Hospital- Cairo.

**Subjects**

A convenience sample of 60 adult patients undergoing total hip replacement were selected their age between 40 – 65 years, both male and female. The subjects divided into two groups (study group 30 and control group 30) patients were choosing randomized; the control group collected at first and then the study. The study group was received educational nursing program, while the control group was received routine hospital care.

**Tools**

The tools of the study were utilized for data collection includes the following:

**Tool I: Structured interview questionnaire sheet**

It consisted of

**Part (1)** Socio demographic data and medical data about the patient such as: age, sex, marital status, occupation, level of education. Medical data include (diagnosis, associated chronic illness such as hypertension, diabetes mellitus, and renal disease).

**Part (2)** Assessment of patient's knowledge about THR ; anatomy of the hip joint, function, definition of THR, indications and complications, knowledge about exercise as importance of exercise and types of exercise. **Scoring system;** the scoring system for part 2 was as follow , each question took one grade for each correct point according number of points in each question answer. The tool contain 7 Questions (Q1 and Q3) grade for each one, (Q2 and Q5) 3 grades for each question, (Q4) 4 grades, (Q6) 5 grades and (Q7) 6 grades the total score for this part (23 grades).

**Reliability and validity of the tool &** of the developed educational nursing program were checked by five special experts from orthopedic surgery and nursing staff. from the medical- surgical field modification then the tool& the educational program were designed in their final format part 2 in tool 1 tested for reliability using internal consistency which was measured using cronbach test, the tool proved to be reliable.

**Educational nursing program:** constructed by researcher after review of literature it consisted of the following:

- Information's about hip replacement included anatomy of hip joint, function, definition of hip replacement, types of hip replacement, indications and complications. Knowledge about exercise as importance and types.
- Discharge instruction post THR included wound care, self care, activity & exercise, medications and anticoagulants drugs.

**II- Operational design****Research implementation (procedure)**

**This study was carried out in three phases**

**Phase I: Preparatory phase**

A review of current and past, local and national literature in various aspects of the problem using books, articles, periodical and journals was done. The proposed study setting were assessed for number of patients admitted to the orthopedic surgery department .This phase ended by pilot study .

**A pilot study**

It carried out in May 2015 to test the feasibility and practicability of the study tool on 10% of the study subject (a group of 6 patients). It has also provided an estimate of the time needed to fill out the tools, no change was done in the assessment sheet, so the six patients selected for the pilot study were included in the main study.

Data were collected at the orthopedic surgery department at Red Crescent hospital – Cairo during the period from June 2015 to June 2016.

The tool was filled through interviewing at about 20-30 minutes; the purpose of the study was explained to the patients prior to answering the questions. The study was carried out during morning and after noon shifts for all available patients.

**Phase II: Educational nursing program implementation phase:**

After assessment of the patients need by structured interview questionnaire tool. The educational nursing program has been developed; the content was consistent with and meet the patient's needs, interests and their levels of understanding. All patients received the educational nursing program contents by the researcher herself using standardized teaching methods.

The designed educational nursing program was conducted through 6 theoretical sessions and the duration of each session was around 20-30 minutes. At the beginning of the first program session, patients were oriented regarding the program contents, its purpose and its impact on her health condition. By the end of the first session, patients were informed about the time of the next one.

Each of the following educational nursing program sessions were usually started by briefing about what has been discussed in the previous session(s) and the objectives of the new session, using simple arabic language. Each session ends by summary to its contents and a feedback from the patients was elicited to ensure maximized educational benefits.

### **Phase III: Educational nursing program evaluation phase**

The participating patients, study group were interviewed three times; the first interview was done before the educational nursing program. The second was done immediately after following the educational nursing program, and the last interview was done three months post program. The control group, interviewed three times control pre, immediate post discharge and 3 months to be compared to study group.

### **III- Administrative Design:**

An official permission to conduct the study was obtained by the researcher from the director of Red Crescent hospital – Cairo. An official permission was taken from the head of the orthopedic surgery department to conduct this study. The title and aim of the study have been illustrated, as well as the main items to be covered in the data collection tools.

### **Ethical considerations**

- Research proposal was approved from ethical committee in the faculty of nursing.
- There is no risk for study subject during application of the research.
- The study follow the common ethical principles in clinical research. - Consent was obtained from patients or guidance that are willing for participate in the study after explaining the nature and purpose of the study.
- Confidentiality and anonymity was assured.
- Study subject have the right to refuse to participate and/ or withdraw from the study without any rational any time.
- Study subject privacy was considered during collection of data.

### **IV: Statistical design**

All data were tabulated. SPSS software version 20.0 was used for statistical analysis. Categorical data were expressed as number and percent. Numerical data were expressed as mean and SD (standard deviation). T-test and Chi square test were used to compare each 2 independent groups of numerical data (control and study groups pre, immediate and after 3 months. P-value was considered to be significant if less than 0.05, high significant if less than 0.01, or insignificant if more than 0.05.

## Results

Table (1): Distribution of demographic and medical data patient characteristics in study &amp; control groups (n=60).

Variable	Study (n=30)		Control (n=30)		P.value
	N	%	N	%	
<b>Age (years)</b>	51.7± 6.2		52.6± 6.6		0.589
- 30 – 50	11	36.7	10	33.3	0.787
- 50 – 60	19	63.3	20	66.7	
<b>Sex</b>					0.787
- Male	10	33.3	11	36.7	
- Female	20	66.7	19	63.3	
<b>Marital status</b>					0.836
- Single	2	6.7	1	3.3	
- Married	23	76.7	22	73.3	
- Divorce	3	10.0	5	16.7	
- Widow	2	6.7	2	6.7	
<b>Educational level</b>					0.691
- Illiterate	5	16.7	7	23.3	
- Read and write	7	23.3	4	13.3	
- Primary	5	16.7	5	16.7	
- Secondary	9	30.0	12	40.0	
- University	4	13.3	2	6.7	
<b>Occupation</b>					0.108
- Not work	8	26.7	14	46.7	
- Work	22	73.3	16	53.3	
<b>Medical data</b>					0.756
- Diabetes mellitus	12	40.0	14	46.7	
- Hypertension	18	60.0	15	50.0	
- Renal disease	0	0.0	1	3.3	

Table 2: Comparison between study &amp; control groups as regarding level of knowledge during study period pre, post and follow up (n=60).

Variable	Pre				P. value	Post				P. value	Follow up				P. value
	Control		Study			Control		Study			Control		Study		
	N	%	N	%		N	%	N	%		N	%	N	%	
<b>Anatomy of hip joint</b>					0.150					<0.000**					0.010**
- Not know	28	93.3	30.0	100.0		15	50.0	29	96.7		20	66.7	28	93.3	
- Know	2	6.7	0.0	0.0	15	50.0	1	3.3	10	33.3	2	6.7			
<b>Function of hip joint</b>					0.373					<0.000**					<0.001**
- Not know	20	66.7	17	56.7		0	0.0	19	63.3		0	0.0	17	56.7	
- Know one point	9	30.0	13	43.3		8	26.7	10	33.3		18	60.0	12	40.0	
- Know 2 points	1	3.3	0	0.0		21	70.0	1	3.3		12	40.0	1	3.3	
- Know 3 points	0	0.0	0	0.0		1	3.3	0	0.0		0	0.0	0	0.0	
<b>Definition of THR:</b>					0.7					<0.000**					0.063
- Not know	24	80.0	23	76.7		6	20.0	22	73.3		15	50.0	22	73.3	
- Know	6	20.0	7	23.3	54	24	80.0	8	26.7	15	50.0	8	26.7		
<b>Indications of THR:</b>					0.478					<0.000**					0.001**
- Not know	12	40.0	12	40.0		0	0.0	12	40.0		2	6.7	12	40.0	
- Know 1 point	10	33.3	14	46.7		6	20.0	13	46.7		9	30.0	13	43.0	
- Know 2 points	7	23.3	4	13.3		12	40.0	5	13.3		17	56.7	5	16.7	
- Know 3 points	1	3.3	0	0.0		10	33.3	0	0.0		2	6.7	0	0.0	
- Know 4 points	0	0.0	0	0.0		2	6.7	0	0.0		0	0.0	0	0.0	
- Know 5 points	0	0.0	0	0.0		0	0.0	0	0.0		0	0.0	0	0.0	

Variable	Pre				P. value	Post				P. value	Follow up				P. value	
	Control		Study			Control		Study			Control		Study			
	N	%	N	%		N	%	N	%		N	%	N	%		
<b>Complications of THR:</b>																
- Not know	22	73.0	23	76.7	0.405	0	0.0	23	6.7	<0.000**	2	6.7	23	76.7	<0.001**	
- Know 1 point	3	10.0	5	16.7		5	16.7	4	40.0		12	40.0	4	13.3		
- Know 2 points	5	16.7	2	6.7		15	40.0	3	46.7		14	46.7	3	10.0		
- Know 3 points	0	0.0	0	0.0		11	36.7	0	0		2	6.7	0	0.0		
- Know 4 points	0	0.0	0	0.0		2	6.7	0	0		0	0.0	0	0.0		
- Know 5 points	0	0.0	0	0.0		0	0.0	0	0		0	0.0	0	0.0		
<b>Importance of exercise</b>																
- Not know	23	76.7	90.0	27	0.166	0	0.0	26	86.7	<0.000**	33	10.0	26	86.7	<0.001**	
- Know 1 point	7	23.3	10.0	3		30.0	4	13.3	16		53.0	4	13.3			
- Know 2 points	0	0.0	0.0	0		53.0	0	0.0	11		36.7	0	0.0			
- Know 3 points	0	0.0	0.0	0		61.7	0	0.0	0		0.0	0	0.0			
<b>Types of exercise</b>																
- Not know	30	100.0	30	100.0	-	0	0.0	30	100.0	<0.000**	3	10.0	30	100.0	<0.001**	
- Know 1 point	0	0.0	0	0.0		1	3.3	0	0.0		6	20.0	0	0.0		
- Know 2 points	0	0.0	0	0.0		11	36.7	0	0.0		14	46.7	0	0.0		
- Know 3 points	0	0.0	0	0.0		4	13.3	0	0.0		7	23.3	0	0.0		
- Know 4 points	0	0.0	0	0.0		7	23.3	0	0.0		0	0.0	0	0.0		
- Know 5 points	0	0.0	0	0.0		7	23.3	0	0.0		0	0.0	0	0.0		
- Know 6 points	0	0.0	0	0.0		0	0.0	0	0.0		0	0.0	0	0.0		

Table (3): Correlation between knowledge and demographic data in pre, post and follow up program.

Variable	Pre				Post				Follow up			
	Study		Control		Study		Control		Study		Control	
	P	R	P	R	P	R	P	R	P	R	P	R
<b>1-Knowledge about THR - Age</b>												
- Sex	0.550	-0.11	0.026*	-0.41	0.168	0.26	0.021*	-0.42	0.423	-0.15	0.017	-0.43
- Marital status	0.657	-0.08	0.403	-0.16	0.556	-0.11	0.415	-0.15	0.826	0.04	0.572	-0.11
- Educational level	0.918	-0.02	0.534	-0.12	0.263	-0.21	0.470	-0.14	0.135	-0.28	0.531	-0.12
- Occupation	0.075	0.33	0.002**	0.54	0.043*	0.37	0.003**	0.53	0.201	0.24	0.003**	0.53
	0.017*	0.43	0.006**	0.49	0.568	0.11	0.007**	0.48	0.216	0.23	0.006**	0.49
<b>2- Knowledge about exercise</b>												
- Age	0.459	0.14	0.727	-0.07	0.462	0.14	0.720	-0.07	0.224	-0.23	0.720	-0.07
- Sex	0.236	-0.22	0.904	-0.02	0.769	-0.06	0.618	-0.09	0.369	0.17	0.618	-0.09
- Marital status	0.447	-0.14	0.853	0.04	0.786	-0.05	0.957	-0.01	0.741	-0.06	0.957	-0.01
- Educational level	0.021	0.42	0.054	0.35	0.581	0.11	0.032*	0.39	0.522	0.12	0.032*	0.39
- Occupation	0.072	0.33	0.093	0.31	0.803	0.05	0.046*	0.37	0.120	0.29	0.046*	0.37
<b>3- total score of knowledge:</b>												
-Age	0.688	-0.08	0.045*	-0.37	0.225	0.23	0.036*	-0.38	0.273	-0.21	0.029*	-0.40
- Sex	0.557	-0.11	0.450	-0.14	0.611	-0.01	0.416	-0.15	0.570	0.11	0.558	-0.11
- Marital status	0.828	-0.04	0.605	-0.10	0.406	-0.16	0.515	-0.12	0.265	-0.21	0.568	-0.11
- Educational level	0.051	0.36	0.002**	0.53	0.128	0.28	0.002**	0.54	0.259	0.21	0.002**	0.53
- Occupation	0.017*	0.43	0.007**	0.48	0.633	0.09	0.006**	0.49	0.123	0.29	0.005**	0.49

**Table (1):** Shows that sociodemographic characteristics among the study and control groups. As regard the age for study and control groups, two third of patients were in age (50-60), this it represents (63% and 67% respectively) and mean±SD were (51.7 ± 6.2 and 52.6 ± 6.6 respectively). As regard

gender, two third of the patients in both groups were females (63.3% and 66.7% respectively).

Regarding the marital status, more than two thirds of the patients in both groups were married (76.7% and 73.3% respectively). As regard educational level more than one third of patients in both groups were secondary level (30.0% and 40.0% respectively). As

regard occupation more than half of patients in both groups were working. Regarding medical characteristics, more than half of the patients in study & control groups were hypertensive (60% and 50% respectively). Also the table shows no statistical significance difference between the study and the control group in all items of sociodemographic data.

**Table (2):** Shows that, no statistical significance difference were found between study and control groups during pre program in all items of knowledge  $P > 0.005$ ; While statistical significance difference between study and control group in post and follow up at all items of knowledge  $P < 0.001$  except in follow up in the item definition of total hip replacement  $P > 0.005$ .

**Table (3):** Shows that there was highly statistically significant correlation between occupation, level of education and knowledge score during pre, post and follow up program in the control group. While no statistically significant correlation between items of sociodemographic data and knowledge score in the study group pre, post and follow up program  $P > 0.005$ .

## Discussion

The most common reason for hip replacement surgery is the wearing down of the hip joint that results from osteoarthritis, other conditions such as rheumatoid arthritis a chronic inflammatory disease that causes joint pain, stiffness and swelling, a vascular necrosis (loss of bone caused by insufficient blood supply), injury and bone tumors also may lead to breakdown of the hip joint (Singh & Lewallen, 2009).

Regarding the age, the current study revealed that about two thirds of patients were in the age group between age 50 and 60 years in both the study and control groups. As regard the gender the majority of the patients were women in both the control and study groups. The results supported by the study of Dowsey et al., (2010) who found that , the hip replacement surgery can be performed safely on early adults and over 65 years old, providing excellent pain relief and improved functional outcome.

The results of the present study are compatible with Smeltzer & Bare (2014) who found that THR can performed at any age while increased with aging from 50- 65 years old also women who had hip replacement had two thirds in this study this agreed with Johanson et al., (2009) who mention that arthritis is the leading cause of joint replacements. And because women have higher rates of arthritis than men, some 60% of joint replacement.

Moskowitz, (2009) stated that, osteoarthritis (OA) is considered most common cause for THR surgeries. The OA strongly correlated with aging; the risk of

OA increases considerably with each decade after the age of 45 years.

Also, this study supported by findings of Meulen & Lewsey, (2007) who reported that, the arthritic conditions induce an increased request for THR, being the second reason for female disabilities and the fourth in males, mainly in economically developed countries, while people over 50 years will double their number.

Regarding medical characteristics; more than half of patients of study and control groups were hypertensive that attribute to the nature of sample age which consider predisposing for chronic disease especially hypertension and diabetes mellitus; this study supported by findings of Aljadhey et al., (2012) who stated that, Non-steroidal anti-inflammatory medications NSAIDs, are the most common medications used to treat individuals who are diagnosed with osteoarthritis. The use of NSAIDs can also directly affect in increasing blood pressure.

Hermann et al., (2009) pointed that individuals who suffer from hypertension or diabetes have higher rates of obesity than the general population. Due to this, they are more likely to suffer from complications so joint replacement is needed.

In the present study results, patients received educational nursing program and instructions about THR during hospitalization increasing their level of knowledge and present answers for their questions which make them more comfort during discharge than control group who received routine hospital care.

This finding agreed with Pelletier, (2002) who mention that many hospitals and clinics now have pre operative classes for patients scheduled for hip replacement surgery. These classes answer questions regarding preparation for the operation and what to expect during recovery, but in addition they provide opportunities for patients to share concerns and experiences. Studies indicate that patients who have attended pre operative classes are more comfort before surgery and generally recover more rapidly.

Johanson et al., (2009) also described pre-operative education for total hip replacement patients and discussed the effect of patient education on the THR patients and found that knowledge, pain, length of hospital stay, performance of exercise and mobilization, patient compliance, adherence and empowerment were all improved as a result of patient education.

Also Hojatallah et al., (2012) emphasized that educational nursing programme for patients undergoing THR surgeries significantly increase their knowledge's and promote their comfort toward care provided.



The present study shows that no statistical significant correlation regarding total knowledge score and educational level or other items of sociodemographic data during post and follow up of the educational nursing program in the study group. While there were highly statistical significant correlations at knowledge score & education level and occupation in the control group that interpret the level of education have effect on ability to receive knowledge.

In the other hand regarding study group that interpret the effectiveness of educational nursing program on patient knowledge regardless of their level of education or occupation and other sociodemographic data. From opinion of the researcher that means the program were introduced by simple manner and understandable for every one in the sample which a good predictor.

This finding was emphasized by **The American Colleges of surgeon, (2011)** who founds that education has a significant impact on the knowledge and competencies of patients who undergoing THR surgeries.

The current study was meeting the aim of the research, where the score of knowledge for patients receiving educational nursing program were higher than the score of knowledge for patients in the control group. So, it can be concluded that results from this study and other studies strongly suggested that teaching should be approached in an organized manner and using teaching plans where appropriate. Also patients post THR need extensive program of health education and exercise before discharge to optimal quality of life and promote recovery.

### Conclusion

There was statistically significant improvement in level of knowledge for patients who received the educational nursing program than those patients who didn't receive the program.

### Recommendations

#### For patients

- Establishing an educational nursing program in orthopedic surgery department in the red crescent hospital to provide teaching for patients about total hip replacement and using a booklet , illustrated pamphlets by images for patients who cannot read and write.
- Each patient must receive map and appointment card indicating the time, day and date of follow up which is scheduled approximately two weeks following discharge. 3- Establishing of educational nursing program to provide health education for patients and discharge planning service that start with hospitalization of patients.

#### For nurses

The discharge planning process need to be stated clearly so that nurses on all shifts are aware of the standard instructions and professional responsibility for discharge planning 2- Nurses should be encouraged to attend specific meeting as workshops and seminars about total hip replacement and its management to be acquainted with the most recent advances and skills in the field.

#### For further research

A similar studies should be replicated on longitudinal bases beyond months until year as a minimum time for follow up 2-The designed educational nursing program should be developed to all hospital of Egypt cities to provide continuous health education for all patients undergoing total hip replacement surgeries.

### References

1. **Aljadhey W., Tu, Richard A., Susan J., Craig, B., & Michael D., (2012):** Comparative effects of non-steroidal anti-inflammatory drugs (NSAIDs) on blood pressure in patients with hypertension. *BMC Cardiovasc Disord.* 12: 93. Published online 2012 Oct 24. doi: 10.1186/1471-2261-12-93.
2. **American Academy of Orthopedic Surgeons (2013):** "Five Things Physicians and Patients Should Question", Choosing Wisely: an initiative of the ABIM Foundation. [www.gogle.com](http://www.gogle.com) accessed at Dec 2016
3. **American Colleges of Surgeon, (2011):** Enrollment and graduations in baccalaureate and graduate program in nursing. Washington, DC. Retrieved February , 21.2011 from <http://WWW.aacn.org/wd/certifications/content/consumerhome>
4. **Bozic K., & Kurtz S., (2010):** Epidemiology of revision total hip, knee arthroplasty in the United States. *Clin Orthop Relat Res* 468 (1), PP 45-51.
5. **Dowsey, M., Liew, D., Stoney, J., & Choong, P., (2010):** The impact of obesity on weight change and outcomes at 12 months in patients undergoing total hip arthroplasty. *Medical Journal of Australia.*193 (1): 17-21.
6. **Fevang B., & Lie S., (2010):** Improved results of primary total hip replacement. *Acta Orthop* 81(6): PP 649–659. [www.google.com](http://www.google.com)
7. accessed at Feb, 2015.
8. **Hojatollah, Y., Malihe, N 2., & Fakhri, S., (2012):** Reviewing the effects of an educational program about sepsis care on knowledge, attitude, and practice of nurses in intensive care units. *Iran J Nurs Midwifery Res.* Feb; 17(2 Suppl1): S91– S95.
9. **Johanson, N., Lachiewicz, P., Lieberman, J., Lotke, P., Parvizi, J., Pellegrini, V., Stringer, T., Tornetta, P., Haralson R., & Watters, W.,**

- (2009): AAOS Clinical Practice Guideline Summary: Prevention of Symptomatic Pulmonary Embolism in Patients Undergoing Total Hip or Knee Arthroplasty. *Journal of the American Academy of Orthopaedic Surgeons*, 17 (3): 183-196
10. **Hermann M., Rölz A., Joos S., Szecsenyi J., Ose D., & Rosemann T., (2009).** impact of concomitant hypertension and osteoarthritis on quality of life among patients with type 2 diabetes in primary care in Germany – a cross-sectional survey. *Health Qual Life Outcomes*. 2009; 7: 19. Published online 2009 Feb 27. doi: 10.1186/1477-7525-7-19.
  11. **Meulen, J., & Lewsey E., (2007):** The role of pain and function in determining patient satisfaction after total knee replacement. Data from the national joint registry for England and Wales,” *Journal of Bone and Joint Surgery B*, vol. 89, no. 7: 893–900
  12. **Moskowitz, R., (2009):** The burden of osteoarthritis: Clinical and quality-of-life issues. *The American Journal of Managed Care*, 15(8 Suppl), S223-9.
  13. **Pelletier, K., (2002):** The Best Alternative Medicine, Part II, "CAM Therapies for Specific Conditions." New York: Simon & Schuster.
  14. **Singh J., & Lewallen D., (2009):** Age, gender, obesity, and depression are associated with patient-related pain and function outcome after revision total hip arthroplasty. *Clin Rheumatol*, 9. 28: 1419-1430.
  15. **Smeltzer, C., & Bare, B., (2014):** "Brunner& Suddarth text book of medical-surgical nursing "10th. Edition, Lippincott and Wilkins company, Philadelphia. P 782
  16. **Sobieraj, D., Lee, S., Coleman, C., Tongbram, V., Chen, W., Colby, J., Kluger, J., Mankanji, S., Ashaye, A., & White C., (2012):** "Prolonged versus standard - duration venous thromboprophylaxis in major orthopedic surgery: a systematic review". *Annals of internal medicine* 156 (10), PP (720–725).
  17. **Van J., & Zhang X., (2010):** Anterolateral muscle sparing approach total hip arthroplasty: an anatomic and clinical study. *Chinese Medicine Journal*; 121 (15):1358-1363.