

Nurses knowledge Toward Cast Complications in Orthopedic Ward at Al-Najaf AL-Ashraf Hospitals.

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Abstract- Nurses are working in orthopedic wards must have adequate knowledge of basic principles about cast complications to be applied in clinical practice because the nursing care of patients with cast complications depends on understanding the scientific principles of this complications.

Objective: To assess nurses knowledge toward prevention of cast complications in orthopedic ward and to find out the relationship between the nurses knowledge with socio-demographic characteristics which as(level of education, year of experiences, and training course).

Methodology: A descriptive study is conducted throughout the period of (November 4th 2015 to June 12th 2016). The sample consisted of (100) nurses who had done a orthopedic ward in AL-Najaf Al-Ashraff hospitals (AL - Sader medical city, AL-Hakeem general hospital, and AL- Furat AL- Awsat hospital. The data were collected the use of a interview technique and the questionnaire which were consisted of (60) items divided into (5) sections which include question about definition and general information about the cast, foundations use the cast, use casts to prevent these complications, assess fractured part and warning signs of problem in the cast. Descriptive statistical analyses were used to analyze the data.

Results : The results of the study shows that the majority of the age group were (23- 27) years old (31%). Most of the study samples (61%) were male. Most of them (59%) were married and (52%) were nursing secondary graduate. Most of the study sample (59%) have insufficient of monthly income and (64%) living in urban area.

Conclusions: The study results indicate that that there is a significant differences association between Nurses knowledge and (age, marital status, educational level, years employed in nursing and years experience in the orthopedic wards, participate in training courses in the field of fractures care). There is no significant differences association between Nurses knowledge and (gender, residence and monthly income).

Recommendations: It should be oriented for educational program (epically orthopedic wards) for all new nurses and implemented actives for updating their knowledge, and designed training programs outside of country and Health directorate should be initiated for increasing the number of nursing staff in orthopedic wards.

Index Terms- Nurses knowledge, Cast Complications, Orthopedic Ward.

I. INTRODUCTION

Casts are a circumferential form of immobilization which will not accommodate for swelling. If swelling occurs in a cast, the patient runs a high risk of compartment syndrome which may compromise the neurovascular integrity of the injured extremity. All efforts should be made to minimize injury swelling. This is best accomplished by using the (rest, ice, compression, and elevation) ,method after a cast has immobilized the injury a cast is indicated for a wide variety of orthopedic injuries that include fractures, sprains and post operative immobilization [1].

The function of a cast is to rigidly protect an injured bone or joint It serves to hold the [broken bone](#) in proper alignment to prevent it from moving while it heals. Casts may also be used to help rest a bone or joint to relieve [pain](#) that is caused by moving it (such as when a severe sprain occurs), but no broken bones. Different types of casts and splints are available, depending on the reason for the immobilization and/or the type of [fracture](#). Casts are usually made of either plaster or fiberglass material [2].

noted that Compartment syndrome, This is a major complication caused by a tight or rigid cast that constricts a swollen limb. When the pressure inside the cast builds up, it can cause damage to the muscles, nerves or blood vessels in the area covered by the cast. The damage may be permanent if it is not discovered and treated promptly. The patient call doctor or visit the emergency room immediately if he notice any of the symptoms(eg.) numbness or tingling in the affected limb, cold or pale skin or skin with a bluish tinge, burning or stinging and increased pain or swelling [3].

Nurses play a major role in prevention of cast complications, as she is the one who early recognize the signs of cast complications during patients stay in hospitals with fracture. She should observe for the adequate problems of the skin and should encourage the patient to take all measurements to prevent complications of cast [4].

II. METHODOLOGY

A descriptive analytic study was conducted on the AL-Najaf Al-Ashraff Hospitals . Starting from the November 4th , 2015 until the June 12th , 2016.In order to assess the nurses knowledge toward cast complications. A non-probability (purposive) sample of (100) nurses, nurses who had done a orthopedic ward in (AL - Sader medical city, AL- Hakeem general hospital, and AL- Furat AL- Awsat hospital. The data were collected by using the questionnaire structured format through interview technique. Each nurse was interviewed

personally by the researcher. The data collection process started in January 26th 2016 to the 27th of March 2016. the questionnaires was constructed and composed of two parts **Part I: demographic Characteristics:** consisted of (9) items which included: age, gender, , marital status, , level of education, Number of service years in nursing, Number of service years in the orthopedic wards, participate in training courses in the field of fracture care ,monthly income, and residence **Part II: nurses' knowledge toward cast complications:** 2.1: First section of the nurses knowledge part was comprised of (21) items, which included question about definition and general information about the cast. 2.2: This dimension was designed to assess the knowledge of nurses toward foundations use the cast consists of (15) items. 2.3: This dimension concerned with use casts to prevent cast complications. It consists of (9) item. 2.4: This dimension was designed to assess the knowledge of nurses toward assess fractured part. It consists of (6) items. 2.5: This dimension concerned with warning signs of problem in the cast. It consists of (9) items. reliability of the questionnaire and content validity was carried out through the 15 experts. Descriptive and inferential statistical analyses were used to analyze the data.

III. RESULTS

Table (1) Distribution of demographic characteristics of (100) nurses.

No.	Variables			
1	Age	Frequency	Percent	Cumulative Percent
1-1	23-27	31	31	31
1-2	28-32	24	24	55
1-3	33—37	27	27	82
1-4	38-42	11	11	93
1-5	43-47	5	5	98
1-6	48 and more	2	2	100.0
	Total	100	100.0	
2	Gender	Frequency	Percent	Cumulative Percent
2-1	Female	39	39	39
2-2	Male	61	61	100.0
	Total	100	100.0	
3	Marital	Frequency	Percent	Cumulative Percent
3-1	Single	37	37	37
3-2	Married	59	59	96
3-3	Separated	3	3	99
3-4	Divorced	1	3	100.0
	Total	100	100.0	
4	Educational level	Frequency	Percent	Cumulative Percent
4-1	Bachelor Degree	8	8	8
4-2	Nursing secondary	52	52	60

	graduate			
4-3	Diploma Degree	40	40	100.0
	Total	100	100.0	
5	Monthly income	Frequency	Percent	Cumulative Percent
5-1	Sufficient	5	5	5
5-2	Parley sufficient	36	36	41
5-3	Insufficient	59	59	100.0
	Total	100	100.0	
6	Residence	Frequency	Percent	Cumulative Percent
6-1	rural area	36	36	36
6-2	Urban	64	64	100.0
	Total	100	100.0	

This table shows that the majority of the age group were (23- 27) years old (31%). Most of the study samples (61%) were male. Most of them (59%) were married and (52%) were nursing secondary graduate. Most of the study sample (59%) have insufficient of monthly income and (64%) living in urban area.

Table (2) Distribution of demographic characteristics of (100) nurses.

1	Years employed in nursing	Frequency	Percent	Cumulative Percent
1-1	1-5	48	48	48
1-2	6-10	21	21	69
1-3	11-15	23	23	92
1-4	16-20	2	2	94
1-5	20 and more	6	6	100.0
	Total	100	100.0	
2	Years' experience in the orthopedic wards	Frequency	Percent	Cumulative Percent
2-1	1-5	74	74	74
2-2	6-10	20	20	94
2-3	11-15	5	5	99
2-4	16 and more	1	1	100.0
	Total	100	100.0	
3	Participate in training courses in the	Frequency	Percent	Cumulative Percent

	field of fractures care				5-1	0	52	52	52
3-1	Yes	48	48	48	5-2	Week	39	39	91
3-2	No	52	52	100.0	5-3	two week	7	7	98
	Total	100	100.0		5-4	A month	1	1	99
4	Number of courses	Frequency	Percent	Cumulative Percent	5-5	More than one month	1	1	100.0
4-1	0	52	52	52		Total	100	100.0	
4-2	One	31	31	83					
4-3	Two	13	13	96					
4-4	Three	2	2	98					
4-5	four or more	2	2	100.0					
	Total	100	100.0						
5	Time period for each session	Frequency	Percent	Cumulative Percent					

This table shows that the majority (48%) of the nurses years employed in nursing from (1-5) years. The study sample indicated that (74%) from nurses of years' experience in the orthopedic wards is (1-5) years. The study sample shows that (52%) form nurses were not participating in the sessions training in care of fractures. The study sample indicated that once training is the most (31%) and the period is one week (39%).

Table (3) Association between the dimensions of (Nurses knowledge) with demographic characteristics.

Age	Nurses knowledge			Total	χ^2 obs.	C.S
	Low F	Moderate F	High F			
23-27	22	5	4	31	27.282	S
28-32	9	8	7	24		
33-37	10	12	5	27		
38-42	2	1	8	11		
43-47	1	2	2	5		
48 and more	0	1	1	2		
Total	44	29	27	100		
Df=10			χ^2 crit.=18.31	P<0.05		
Gender	Nurses knowledge			Total	χ^2 obs.	C.S
	Low F	Moderate F	High F			
Female	22	9	8	39	4.008	N.S
Male	22	20	19	61		
Total	44	29	27	100		
Df=2			χ^2 crit.=5.99	P<0.05		
Marital status	Nurses knowledge			Total	χ^2 obs.	C.S
	Low F	Moderate F	High F			
Single	24	8	5	37	15.274	S
Married	18	20	21	59		
Separated	2	1	0	3		
Divorced	0	0	1	1		

Total	44	29	27	100		
Df=6	χ^2 crit.=12.59			P≤0.05		

Educational Level	Nurses knowledge			Total	χ^2 obs.	C.S
	Low f	Moderate F	High F			
Bachelor	0	4	4	8	21.647	H.S
Nursing secondary graduate	31	16	5	52		
Diploma	13	9	18	40		
Total	44	29	27	100		

Df=4	χ^2 crit.=9.49	P≤0.05
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Years employed in nursing	Nurses knowledge			Total	χ^2 obs.	C.S
	Low F	Moderate F	High F			
1-5	33	9	6	48	24.815	S
6-10	6	7	8	21		
11-15	4	10	9	23		
16-20	0	1	1	2		
20 and more	1	2	3	6		
Total	44	29	27	100		

Df=8	χ^2 crit.=15.51	P≤0.05
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Years' experience in the orthopedic wards	Nurses knowledge			Total	χ^2 obs.	C.S
	Low f	Moderate F	High F			
1-5	42	19	13	74	23.641	S
6-10	2	7	11	20		
11-15	0	2	3	5		
16 and more	0	1	0	1		
Total	44	29	27	100		

Df=6	χ^2 crit.=12.59	P≤0.05
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Residence	Nurses knowledge			Total	χ^2 obs.	C.S
	Low F	Moderate F	High F			
rural area	14	13	9	36	1.398	N.S
Urban	30	16	18	64		
Total	44	29	27	100		

Df=2	χ^2 crit.=5.99	P≤0.05
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Participate in training courses in the field of fractures care	Nurses knowledge			Total	χ^2 obs.	C.S
	Low f	Moderate F	High F			
Yes	4	21	23	48	48.57	H.S
No	40	8	4	52		
Total	44	29	27	100		

Df=2	χ^2 crit.=5.99	P≤0.05
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Monthly income	Nurses knowledge			Total	χ^2 obs.	C.S
	Low f	Moderate F	High F			
Sufficient	1	3	1	5	7.731	N.S
Parley sufficient	11	12	13	36		
Insufficient	32	14	13	59		
Total	44	29	27	100		
Df=4	χ^2 crit.=9.49			P \geq 0.05		

This table shows that there is a significant differences association between Nurses knowledge and (age, marital status, educational level, years employed in nursing and years' experience in the orthopedic wards, participate in training

courses in the field of fractures care). There is no significant differences association between Nurses knowledge and (gender, residence and monthly income).

Table (4) correlation coefficient between (level of education, age, gender, martials status, years employed in nursing and years' experience in the orthopedic wards, monthly income) with (age, gender, marital status, years employed in nursing and years' experience in the orthopedic wards).

	Level of education	Age	Gender	Marital Status	years employed in nursing	years' experience in the orthopedic wards	Monthly income
Level of education	1						
Age	.267**	1					
Gender	.116	.225*	1				
Marital Status	.179	.322**	.160	1			
years employed in nursing	.254*	.751**	.299**	.388**	1		
years' experience in the orthopedic wards	.275**	.489**	.129	.212*	.534**	1	
Monthly income	.103	-.161-	.072	-.034-	-.255*	-.187-	1
Nurses knowledge	.070	.339**	.148	.243*	.351**	.404**	-.214*

This table shows that there is strong positive relationship between years employed in nursing with years' experience in the orthopedic wards (.534**) and there is moderate positive relationship between nurses knowledge with [age (.339**), marital status (.243*), years employed in nursing (.351**), years' experience in the orthopedic wards (.404**)] and there is moderate negative relationship between nurses knowledge with monthly income (-.214*). There is weak positive relationship between nurses knowledge with gender (.148). There is no relationship between nurses knowledge with level of education (.070).

IV. DISCUSSION

Part I: Discussion of the sample demographic characteristics (table 1,2).

- Age:

Through (table1) the data analysis distribution of demographic characteristics, the study revealed that most of the nurses (31%) at age group (23-27) years of old, that present most of them young age group. This result agree the Al-Aboudy which stated that the highest percentage (30%) of nurses are at (25-29) age group [5]. Also Sathiyat study shows that the highest rate of the nurses (53%) were in the age group of (21-30) years old [6]. In addition El Enein study reflect that the mean age of the study subjects was 25.3 ± 8.2 and the highest percentage of nurses aged

between 18 years to less than 25 years accounted for 55% of the total sample and this is with agreement with present study result[7]. Another study conducted by Mohamed argue that 75% of nurses included in the sample were less than 30 years of age[8].

- **Gender:**

The present study revealed that the majority of nurses (61%) were male .This means that Men were more than women. Sathiya study results concerning gender indicates that (83%) of the study sample were male and (17%) were female and this result share the present study finding[6]. In addition the Al-Barwari study results shows that (55%) of the nurses were male in Duhok and (55%) in Erbil[9], also Bader study findings indicates that the majority of the study sample (61.5%) was male and the remaining was female and all of these study results are in agreement with this study findings[10].

- **Marital status:**

The current study revealed that the majority of nurses (59%) were married. In Haleema and Thair [11] study and in regard to the subject marital status, the majority of the sample were married and they accounted for (76.9%) of the whole sample and Islam [12] study finds that all of the study sample were married finally Sathiya study view that 75% of the involved nurses were also married. The previous mentioned study results support the current study finding and are in agreement with it[6].

- **Residence:**

The present study shows that (64%) of the nurses living urban area and this result is in agreement with HadiAtiyah and Haithemthat indicates the majority of nurses(93%) living urban area[13].

- **Monthly income:**

The present study revealed that the majority of nurses have insufficient (59%) monthly income. This result agree HadiAtiyah and Haithem, (2015) which stated that the highest percentage (49%) of nurses are insufficient monthly income[13].

- **Educational levels:**

The study revealed that (52%) off the included nurses were Nursing secondary graduate and this result is in agreement with Sathiya that indicates the majority of nurses (37%) were secondary graduated[6]. Al-Barwari study findings share the same result with the previous study and shows that 80% of the study subjects were secondary nursing graduated[9].

- **Years employed in nursing:**

This current study shows that the majority (48%) of the nurses years employed in nursing from (1-5) years. Turner study reveals that (81%) had more than one year of experience[14], which supports the current study result. Also El Enein finds that the highest percentage of nurses had 1 to 5 years of experience (52.5%) this finding is in agreement with the present study results[7].

- **Years' experience in the orthopedic wards:**

The study sample indicated that (74%) from nurses have (1-5) years of experience in the orthopedic wards. Samira and Rajaa,(2005) which conducts her study in Baghdad finds that (54%) of the nurses had (1-5) years of experience in orthopedic wards. Also Al-Barwari study results indicated that (65%) from nurses have 1-5 years of experience in the orthopedic in duhok and (55%) in arbil[9]. While in Bader Study results indicates that (53.8 %) of the study sample having 1-5 years of experience

in orthopedic wards[10]. finally Mohamed study results views that The (75%) of participants were experience within 1-10 years in the orthopedic wards. The results of previous mentioned studies are in agreement with the present study finding regarding years of experience in orthopedic wards[8].

- **Participate in training courses in the field of fractures care:**

The present study shows that (52%) of nurses were not participating in the training sessions concerning care of fractures. Samira and Rajaa study finding agree this result through that (82%) of the involved nurses had no training courses in orthopedic[15]. In other study Al-Barwari shows that (95%) of nurses were not participating in the training sessions related to care of fractures in Duhok and (75%) in arbil[9]. Also in El Enein study results 97.5% had no training sessions towards fracture care and this result accompany the Islam study result that indicates 98.9% of the study sample does not participating in any training sessions, and all of these study results support the current study findings.[7,12].

Part V11: dimensions of Nurses knowledge with demographic characteristics

The study revealed that there is shows that there is a significant differences association between nurses knowledge and (age, marital status, educational level, years employed in nursing and years experience in the orthopedic wards, participate in training courses in the field of fractures care). There is no significant differences association between nurses knowledge and (gender, residence and monthly income),(table 8). This results supported by Samira and Rajaa study, shows in their study that was significant relationship between their knowledge and education level only, but that there was no significant between nurses knowledge and, years of employment, years of experience and training courses[15]. Al-Barodey a study revealed that many authorities in education emphasized that the level of education had positive effect on the quality and quantity of knowledge and practices[16]. Al-Aboudy mentioned in his study that the nurses in orthopedic ward must take in services education to motivate them and increasing their knowledge regarding nursing management of the orthopedic ward[10].

Part V111: correlation coefficient between (level of education, age, gender, martial's status, years employed in nursing and years experience in the orthopedic wards, monthly income) with (age, gender, marital status, years employed in nursing and years experience in the orthopedic wards).

The findings of the study sample show that there is strong positive relationship between years employed in nursing with years experience in the orthopedic wards and there is moderate positive relationship between nurses knowledge with [age , marital status , years employed in nursing , years experience in the orthopedic wards] and there is moderate negative relationship between nurses knowledge with monthly income. There is weak positive relationship between nurses knowledge with gender. There is no relationship between nurses knowledge with level of education (table 9). This results supported by Al-Barwaria study indicated that no significant differences between nurses knowledge with level of education and in orthopedic units[9]. In addition HadiAtiyah and Haithem shows that there is moderate positive relationship between nurses' knowledge with gender,

residence and location of employ and no relationship between the nurses' knowledge and level of education[13].also Al-Janabi and Al-Ftlawy mentioned that Concerning relationship between nurses' knowledge with gender, residence most studies which were done in Iraq concerning nurses knowledge in cardiology department, which indicated that the majority of study sample nurses were male and living urban area and non-significant relationship between the gender and level of knowledge and nurses ,knowledge was low[17,18].

V. CONCLUSION

The result of study can be concluded: It is found that the most of nurses are middle age group within (23-27) years old, most of the nurses were male and living in urban areas, It is concludes that the most of nurses are secondary nurses graduated, due to a much presence of junior nursing which mostly of the graduates are female nurses, the majority of the nurses were married with insufficient monthly income and most of the nurses years employed in nursing (1-5) years, most of the nurses years' experience in orthopedic wards(1-5) years. most of the sample have no participating in the sessions training in care of fractures.

VI. RECOMMENDATIONS

The study recommended that: nurses working in orthopedic wards must have adequate knowledge of basic research to be applied in clinical practice because the nursing care of patients with cast complications depends on understanding the scientific principles of this complications. Lack of this knowledge make them unable to find out the patients' problems and cannot plan effective nursing care. It should be oriented for educational program (epically orthopedic wards) for all new nurses and implemented actives for updating their knowledge, and designed training programs outside of country. Health directorate should be initiated for increasing the number of nursing staff in orthopedic wards. Hospitals policy should be standardized tool for periodic evaluation of the nurse's knowledge and skills in orthopedic wards.

REFERENCES

- [1] Boyd, Anne S. Benjamin, Holly J. Asplund, Chad. Splints and casts indications and methods. *American family physician*, (2009):80(5),pp. 491-499.
- [2] Samuel, A. Brown, M. Frank, R. orthopedic immobilization techniquesa step-by-step guide for casting and splinting, United States Sagamore, (2014):p.1-10.
- [3] Halanski, Matthew, Kenneth, J. and Noonan. "Cast and splint immobilization: complications." *Journal of the American Academy of Orthopaedic Surgeons*(2008): 16(1), pp 30-40.

- [4] Mersal, Fathia A. "Caregivers' Knowledge and Practice Regarding Prevention of Immobilization Complications in El-demerdash Hospital Cairo Egypt."32 :(2014), p.78.
- [5] Al-Aboudy, R. Evaluation of knowledge and practices of nurses in orthopedic wards concerning femur fractures care, A master thesis, College of Nursing, University of Baghdad, (2002): pp. 18-78.
- [6] Sathiya K, Mohan Kumar, Prasanna baby,A study to assess the effectiveness of lap top assisted nursing strategies on knowledge regarding prevention of complications of immobility among patients with major orthopedic trauma, *Journal of Science*,(2015): 5(3) pp.185-188: www.journalofscience.net.
- [7] El Enein, Nagwa Younes Abou, Azza Saad Abd El Ghany, and Ashraf Ahmad Zaghoul. "Knowledge and performance among nurses before and after a training programme on patient falls." (2012):pp. 358-364.
- [8] Mohamed, Salwa A., and Soheir M. Weheida. "Effects of implementing educational program about pressure ulcer control on nurses' knowledge and safety of immobilized patients." *Journal of Nursing Education and Practice* (2015): 5(3) ,pp.12-17.
- [9] Al-Barwari, R. "Evaluation of Nursing Knowledge and Practices Concerning Nursing Care of Patient with Skin Traction in Orthopedic Units in Kurdistan Region." *Sci Nurs*, (2006):19(2), pp.24-31.
- [10] Bader T, Evaluation of nurses' practices toward orthopedic wound infection . A master thesis, College of Nursing, University of Baghdad, (2012).pp.50-59.
- [11] Haleema, Y. Thair.R.Evaluation of nurses' practices toward orthopedic wound infection . A master thesis, College of Nursing, University of Baghdad, Iraqi National Journal of Nursing Specialties,(2012): 25,pp.58-65.
- [12] Islam, Shariful. "Nurses' Knowledge, Attitude, and Practice Regarding Pressure Ulcer Prevention for Hospitalized Patients at Rajshahi Medical College Hospital in Bangladesh." (2010):pp.48-59.
- [13] HadiAtiyah, Haithem Mohammed Dr Hussein. "Nurses, Knowledge Concerning an Implantation Pacemaker For Adult Patients with Cardiac Rhythm Disorder at Al-Nassirhyia Heart Center." *Kufa Journal for Nursing Sciences*,(2016) 1).6 :),PP.25-32.
- [14] Turner, Barbara N. Evaluating the knowledge and attitudes regarding pain management among nurses in a surgical setting at an acute care facility. *Gardner-Webb University*, (2012):pp 20-27.
- [15] Samira, A. Rajaa, I. Evaluation of Knowledge and Practicesof Nurses in Orthopedic wards concerning femur Fractures, A master thesis, College of Nursing, University of Baghdad, *Sci. J. Nursing/ Baghdad*, (2005):18(2),PP.25-31.
- [16] Al-Barodey, N. Practice and knowledge of nurses about catheterization in relation to urinary tract infection, A master thesis, college of Nursing, University of Baghdad, (1990): pp.13-95.
- [17] Al-Janabi, M.A. M. Assessment of Nurses' Knowledge towards Cardiopulmonary Resuscitation at Al-Najaf City's Teaching Hospital. *Kufa Journal for Nursing Sciences*, (2014):4(1),pp.1-10.
- [18] Al-Ftlawy, D. M. H. Determination of nurses' knowledge toward care provided to patients with acute myocardial infarction in Al-Najaf City. *Kufa Journal for Nursing Sciences*,(2014):2(2) :www.uokufa.edu.iq/journals/index.php/kjns/article/view

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