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Assessment of Nurses' Knowledge toward Children with Guillain-Barre Syndrome at Pediatric Hospitals in Baghdad City

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الخلاصة:

الهدف: تهدف الدراسة إلى تقييم مستوى معارف ممرضي الأطفال تجاه التهاب جذور الأعصاب المحيطية عند الأطفال وايجاد العلاقة بين معارفهم حول المرض والمعلومات الديموغرافية لهم.

المنهجية: اختيرت عيّنة غرضيّة "غير عشوائية" من (٣٠) ممرضاً وممرضة يعملون مع الأطفال في الردهات الباطنية العصبية، ووحدات العناية التنفسية في مستشفى حماية الأطفال التعليمي، مستشفى الطفل المركزي التعليمي، مستشفى الكاظمية التعليمي، مستشفى بغداد التعليمي، ومستشفى العلوم العصبية للمُدّة من الخامس من آذار إلى ٣٠ نيسان ٢٠٠٩. اشتملت أداة الدراسة على جزئين؛ الجزء الأول تناول المعلومات الديموغرافية للممرضيين، والجزء الثاني تناول أسئلة استبيانية تتعلق بمعارف الممرضين تجاه التهاب جذور الأعصاب المحيطية عند الأطفال وتضمّن قسمين؛ الأولتكوّن من ٢٠ فقرة خاصة بالمعلومات العامة للمرض والثانيتكوّن من ١٢ فقرة خاصة بالعناية التمريضية بالمرض. جمعت البيانات من خلال استبانة خاصة مؤلفة من أسئلة ذات طبيعة اختيار من متعدد، وقد استعملت طريقة الإدخال الشخصي. حللت البيانات باستعمال برنامج SPSS باستعمال التحليل الإحصائي الوصفي (التكرارات، النسب المئوية، الربعييات، الوسط الحسابي) والتحليل الاحصائي الاستنتاجي (مربع –كاي).

النتائج: بيّنت نتائج الدراسة لُ المستوى المعرفي لغالبية الممرضين (٨٠%) ضعيف فيما يتعلق بالمعارف العامة للمرض (فقط أجابوا على ٤ فقرات بشكل صحيح من ٢٠ فقرة). والعناية التمريضية للمرض (فقط أجابوا على ٣ فقرات بشكل صحيح من ١٢ فقرة). أظهرت نتائج الدراسة عدم وجود علاقة ذات دلالة معنوية بين الجنس وسنوات الخبرة والدورات التعليمية من جهة والمعارف الخاصة بالمعلومات العامة والعناية التمريضية من جهة اخرى، وكذلك عدم وجود علاقة ذات دلالة معنوية بين العمر والحالة الزوجية والمعارف الخاصة بالعناية التمريضية بالمرض. في حينأنّ هناك علاقة ذات دلالة معنوية عالية بين المستوى التعليمي والمعارف الخاصة بالمعلومات العامة والعناية التمريضية، وكذلك وجود علاقة ذات دلالة معنوية بين سنوات الخدمة في المستشفيات العامة والمعارف الخاصة بالمعلومات العامة والعناية التمريضية. كما لُ هناك علاقة ذات دلالة معنوية بين العمر والحالة الزوجية والمعارف الخاصة بالمعلومات العامة بالمرض.

التوصيات: أوصت الدراسة بضرورة زيادة اعداد الممرضين الشباب، المهنيين، خريجي كليات التمريض، للعمل في الردهات الباطنية العصبية و وحدات العناية التنفسية لامتلاكهم المعلومات حول التهاب جذور الاعصاب المحيطية عند الأطفال، التأكيد على ضرورة الاتصال و التوؤمة مع المنظمات و المؤسسات و الجمعيات العالمية التي لها القدرة على توفير المعلومات الحديثة و ارسال الممرضين لغرض تدريبهم على احدث التطبيقات التمريضية التي توفرها تلك المؤسسات للعناية بالأطفال المصابين بهذا المرض.

Abstract:

Objectives: The study aimed to assess the level of pediatric nurses' knowledge toward children with Guillain-Barre syndrome (GBS) and to find out the relationships between nurses' knowledge and their demographic data.

Methodology: A purposive "non probability" sample of (30) nurses was selected from medical neurological wards and Respiratory Care Units of Children Welfare Pediatric Teaching Hospital, Child's Center Pediatric Teaching Hospital, AL-Kadhemia Teaching Hospital, Baghdad Teaching Hospital, and Neurological Science Hospital which has started from March 5th 2009 to April 30th 2009. The study instrument consists of two parts. The first part is concerned with nurses' demographical characteristic and the second one is concerned with nurses' knowledge which is divided into two sections. Section one consists of (20) items which are related to nurses' knowledge about general information of Guillain-Barre Syndrome, and section two (12) items concerning nurses' knowledge in relation to nursing care of GBS. Data were collected through a special constructed questionnaire format which includes multiple choice questions. A self-administration method was used. Data were analyzed by using SPSS packed version (10.0), a descriptive statistical analysis (frequencies, percentage, quartile, and mean of scores), and inferential statistical analysis (chi-square) were used.

Results: The study results revealed that (80%) of nurses had poor knowledge in relation to general information (only answer 5 items correctly out of 20 items) and nursing care (only answer 3 items correctly out of 12 items) of children with Guillain-Barre Syndrome. The results of the study revealed that there was no significant association between nurses' knowledge related to the general information and nursing care and gender, years of experiences in neurological ward and respiratory care units (RCUs), and training session.

Keywords: Assessment; Nurses' Knowledge; Children; Guillain-Barre Syndrome

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Also, there is a high significant association between nurses' knowledge and their level of education and years of employment as a nurse in general hospital, and there is a significant association between nurses' knowledge related to general information and age, marital status; but there is no significant association between nursing care and age, marital status.

Recommendations: The study recommends about necessity of increasing numbers of the professional, young, nurses college graduates in neurological, and RCUs units, and twinning with international foundations, organizations, and to train nurses about highly advanced GBS contents outside Iraq.

Introduction

Guillain-Barre Syndrome (GBS) is defined as an immune-mediated disorder of the peripheral nervous system. The immune system attacks spinal nerve roots, peripheral nerves, and rarely cranial nerves, resulting in focal inflammation, with variable damage to myelin sheaths and axon fibers that occur rather than microorganism [(1)].

Guillain-Barre Syndrome is an uncommon neurological disorder which causes damage to the peripheral nerves. These nerves send messages from the brain to the muscles; give the order to the muscles to move. They also carry sensations such as pain from the body to the brain. The nerve damage often causes muscle weakness and affect motor activity, often to the point of paralysis, and can cause problems with sensation, including pain, tingling, "crawling skin" or numbness [(2)].

The management of GBS requires multidisciplinary care. The patient's management extends across the continuum of care from the critical care unit to medical-surgical units to rehabilitation centers and on into home care. The overall goal of care is to provide support during the acute phase of illness, so that the patient remains in the best possible condition for remyelination [(3)]. During the acute phase of disease, a support from loved ones is very important. The caregiver should stay with the patient as much as possible and give good care to improve his/her health and decrease complications [(4)].

Methodology

A descriptive study was conducted on male and female pediatric nurses who are providing care to the children who have Guillain-Barre syndrome. Assessment approach has been used. Data collection has started from March 5th to April 30th, 2009. A purposive "non-probability" sample of (30) nurses was selected from Pediatric Teaching Hospitals which represent (70%) out of the total number of the nurses (43) working in neurological medical wards, respiratory care unit (Table 1). (13) nurses were excluded, because some of them are transferred to other hospitals rather than pediatric units that result in missing part of the sample, while the others were enabled to answer due to night shift and lack of interest in the study.

Table 1. Sample distribution by hospital

Hospital	Frequency	Percent
Children Welfare Pediatric Teaching Hospitals	10	33.33
AL-Kadhemia Teaching Hospital	7	23.33
Baghdad teaching hospital	6	20
neurological science hospital	4	13.33
Child's Center Pediatric Teaching Hospital	3	10
Total	30	100

A questionnaire format was constructed through extensive review of available literatures and related studies. The questionnaire format consists of two parts. The first part is related to the nurses' demographic data and the second part is related to the pediatric nurses' knowledge about Guillain-Barre syndrome which includes two sections general information (Table 2), and nursing care (Table 3). The investigators have collected the data through a direct interview with the subject of the study and self-administration approach used to answer the constructed questionnaire format. The validity of the instrument was determined through a panel of (16) experts. They were asked to review and evaluate the questionnaire for its content, clarity, and adequacy. On the basis of their comments and suggestions, some modifications were made and changes were performed. The reliability was determined through the use of test and retest approach. The correlation coefficient of the questionnaire was (r =0.84). Descriptive statistics (frequency, percentage, mean of scores, and quartile) to assess the level of knowledge by using the three levels (low, moderate, high), it is set by taking the lowest value of questionnaire and subtract from the total value of questionnaire and the result is divided by three and the final result is the quartile value (qv)), and inferential statistics included chi-square were used to analyze the data.

Results

The results indicate that (40%) of the sample is in the age group (18-27), (76.7%) of them is male, (63.3%) is married, (30%) is secondary nursing school graduated, the majority (90%) of them has no training sessions, (80%) has (1-5) years of experience in pediatric field, and (36.7%) has (1-5) years of employment in the general hospital.

Table 2. Nurses' knowledge items related to general information

List	General information items of Guillain-Barre syndrome (GBS)	True		False		Mean score	C.S.
		f	%	f	%		
1	Guillain-Barre syndrome defined as	2	6.7	28	93.3	1.07	NS
2	Guillain-Barre syndrome considered as	3	10	27	90	1.1	NS
3	Type of Guillain-Barre syndrome	6	20	24	80	1.2	NS
4	Guillain-Barre syndrome classified as	4	13.3	26	86.7	1.13	NS
5	Guillain-Barre syndrome causes	7	23.3	23	76.6	1.25	S
6	Guillain-Barre syndrome affect	1	3.3	29	96.7	1.03	NS
7	The main cause of Guillain-Barre syndrome	3	10	27	90	1.1	NS
8	The predisposing factor for GBS	0	00.0	30	100.0	1	NS
9	The main event proceeding in GBS	3	10	27	90	1.1	NS
10	The main symptoms of GBS	8	26.7	22	73.3	1.27	S
11	The pt. of GBS is suffering from weakness in	2	6.7	28	93.3	1.07	NS
12	The patient of GBS suffering from	11	36.7	19	63.3	1.36	S
13	The main symptom of respiratory dysfunction of GBS patient	6	20	24	80	1.2	NS
14	The main symptom of autonomic nerves system of GBS patient	6	20	24	80	1.2	NS

Table 2. (Continued)

List	General information items of Guillain-Barre syndrome (GBS)	True		False		Mean score	C.S.
		f	%	f	%		
15	The main signs of Guillain-Barre syndrome	11	36.7	19	63.3	1.36	S
16	The main laboratory test of GBS	1	3.3	29	96.7	1.03	NS
17	The main technical diagnosis test of GBS	0	00.0	30	100.0	1	NS
18	The main drugs used in treatment of GBS	4	13.3	26	86.7	1.13	NS
19	The main treatment procedure of GBS	5	16.7	25	83.3	1.17	NS
20	The major and serious problem of GBS	10	33.3	20	66.7	1.33	S

C.S= Comparative Significance; F= Frequency; %= Percent; NS= Non-significant; S=Significant

This table shows that the majority of nurses has poor knowledge included 15 items out of 20 items, except that of (5, 10, 12, 15, and 20) which are considered significant.

Table 3. Nurses' knowledge items related to nursing care

List	Nursing care (Nursing) items of Guillain-Barre syndrome (GBS)	True		False		Mean score	C.S.
		f	%	f	%		
1	The main Nursing care of GBS are	10	33,3	20	66.7	1.33	S
2	The main symptom of pt. who need artificial ventilation	4	13.3	26	86.7	1.13	NS
3	The main nursing care to maintain opening air way	3	10	27	90	1.1	NS
4	nursing of tracheotomy orifice	7	23.3	23	76.7	1.23	NS
5	The main NSG care to maintain of autonomic disturbances	1	3.3	29	96.7	1.03	NS
6	nursing care to prevent immobilization complication	5	16.7	25	83.3	1.17	NS
7	nursing care to prevent bed sores due to long immobilization	6	20	24	80	1.2	NS
8	nursing care of constipation and urinary retention	16	53.3	14	46.7	1.53	S
9	Physical therapy is included in GBS	10	33.3	20	66.7	1.33	S
10	The improvement of GBS start at	4	13.3	26	86.7	1.13	NS
11	The main complications of GBS	5	16.7	25	83.3	1.17	NS
12	The prognosis of GBS	3	10	27	90	1.1	NS

C.S= Comparative Significance; F= Frequency; %= Percent; NS= Non-significant; S=Significant

This table shows that the majority of nurses has poor knowledge related to nursing care items included 9 items out of 12 items, except that of (1, 8, and 9) which are considered significant.

Table 4. Association between the nurses' age and their knowledge related to (general information, and nursing care)

Variables	Nurses' knowledge											
	General Information about disease						Nursing Care of disease					
Age	True		False		Total		True		False		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
18-27	51	21	189	79	240	100	33	23	111	77	144	100
28-37	29	14.5	171	85.5	200	100	29	24	91	76	120	100
38-47	8	10	72	90	80	100	7	14.5	41	85.5	48	100
48-above	5	6	75	94	80	100	5	10.5	43	89.5	48	100
Total	93	15.5	507	84.5	600	100	74	21	286	79	360	100
	χ^2 obs=13.3108 df=3 χ^2 crit=7.815						χ^2 obs=5.4806 df=3 χ^2 crit=7.815					

df= Degree of Freedom; n= **Number; χ2 crit= Critical Chi-square; χ2 obs= Observed Chi-square**

This table shows that nurses' knowledge is related to general information and has significant association with the nurses' age; while nurses' knowledge related to nursing care has no significant association with the nurses' age.

Table 5. Association between the nurses' marital status and their knowledge related to (general information, and nursing care)

Variables	Nurses' knowledge											
	General Information about disease						Nursing Care of disease					
Marital Status	True		False		Total		True		False		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Single	48	12.6	332	87.4	380	100	41	18	187	82	228	100
Married	41	20.5	159	79.5	200	100	31	26	89	74	120	100
Widow	4	20	16	80	20	100	2	16.7	10	83.3	12	100
Total	93	15.5	507	84.5	600	100	74	21	286	79	360	100
	χ^2 obs=6.5119 df=2 χ^2 crit=5.991						χ^2 obs=3.223 df=2 χ^2 crit=5.991					

df= Degree of Freedom; n= **Number; χ2 crit= Critical Chi-square; χ2 obs= Observed Chi-square**

This table shows that nurses' knowledge is related to general information and has significant association with the nurses' marital status**;** while nurses' knowledge related to nursing care has no significant association with the nurses' marital status**.**

Table 6. Association between nurses' level of education and their knowledge related to (general information, and nursing care)

Variables	Nurses' knowledge											
	General Information about disease						Nursing Care of disease					
Level of Education	True		False		Total		True		False		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Training course in Nursing	1	1.7	59	98.3	60	100	2	5.6	34	94.4	36	100
Primary Nursing school	3	7.5	37	92.5	40	100	6	25	18	75	24	100
Secondary Nursing school	21	11.7	159	88.3	180	100	9	8.3	99	91.7	108	100
Nursing institute	33	20.6	127	79.4	160	100	25	26	71	74	96	100
Nursing College	35	21.8	125	78.2	127	100	32	33.3	64	66.7	96	100
Total	93	15.5	507	84.5	125	100	74	20.6	286	79.4	360	100
	χ^2 obs=20.9 df=4 χ^2 crit=9.488						χ^2 obs=26.487 df=4 χ^2 crit=9.488					

df= Degree of Freedom; n= **Number; χ2 crit= Critical Chi-square; χ2 obs= Observed Chi-square**

This table shows that nurses' knowledge is related to general information and nursing care has high significant association with the nurses' level of education**.**

Table 7. Association between nurses' year of employment as a nurse and their knowledge related to (general information, and nursing care)

Variables	Nurses' knowledge											
	General Information about disease						Nursing Care of disease					
Year of employment	True		False		Total		True		False		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
1-5	46	20.9	174	79.1	220	100	38	28.8	94	71.2	132	100
6-10	21	17.5	99	82.5	120	100	13	18	59	82	72	100
11-15	13	13	87	87	100	100	17	28.4	43	71.6	60	100
16-20	9	15	51	85	60	100	3	8.3	33	91.7	36	100
21-25	2	2.5	78	97.5	80	100	2	4.2	46	95.8	48	100
26-above	2	10	18	90	20	100	1	8.3	11	91.7	12	100
Total	93	15.5	507	84.5	600	100	74	20.6	286	79.4	360	100
	χ^2 obs=16.5787 df=5 χ^2 crit=11.070						χ^2 obs=20.2885 df=5 χ^2 crit=11.070					

df= Degree of Freedom; n= Number; χ2 crit= Critical Chi-square; χ2 obs= Observed Chi-square

Table (7) shows that nurses' knowledge related to general information and nursing care has significant association with the nurses' years of employment as a nurse.

Table 8A. The level of nurses' knowledge related to general information according to the total score

Level / Nurses 'knowledge	Level of knowledge					
	Low (20-26)		Moderate (26-33)		High (33-40)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
General information	24	80%	6	20%	0	0.00

This table shows that (80%) of nurses has low level knowledge related to general information.

Table 8B. The level of the nurses' knowledge related to nursing care according to the total Score

Level / Nurses 'knowledge	Level of knowledge					
	Low (12-16)		Moderate (16-20)		High (20-24)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Nursing care	24	80%	6	20%	0	0.00

This table shows that (80%) of nurses has low levels knowledge related to nursing care.

Discussion

In general, nurses' knowledge was poor, where they only knew the items (10, 12, 15, and 20), these information reflect general concepts, causes of GBS, diagnosis of GBS, treatment of GBS, (the assessment of respiratory; autonomic; and weakness) and complications (Table 2). This result might be due to recently new admission of GBS cases in the hospitals and they started to have special wards and units for this disease. The nurse should also be aware of laboratory studies that evaluate hypotonia and weakness, including electromyography (EMG), muscle biopsy, and lumber puncture; and the importance of obtaining detailed history and to ensure a thorough physical examination [(6)].

Guillain-Barre Syndrome is an uncommon, idiopathic disease and to care effectively for patients with GBS. It is necessary to be familiar with symptomatology, incidence, and pathology. By using this information, nursing assessment may be performed and interventions developed and individualized as needed [(7)]. Because of the GBS is an uncommon disease, nurses notice few cases yearly, so no interest is found [(8)].

The results of table (2) are supported by a study regarding the biological nature of GBS, major diagnosis criteria, and the treatment is important in nurse role in management of the disease [(9)]. It's important that the nurse should understand the pathophysiology of disease and its effects on the organs and the tissues, epidemiology and aetiology of disease, pathological effect of GBS on the

components of the peripheral nervous system, the appropriate assessment, the treatment measures, and the outcomes of the disease [10].

In relation to nurses' knowledge, only four items (10, 12, 15, and 20) were significant (Table 3) which means that nurses' knowledge are good. These items reflect GBS causes, main symptoms, main signs, the patients of GBS suffering from, and the major serious problem. It has been emphasized that many difficulties could be overcome if nurses have a sound basis of knowledge concerning the disease [11]. While, it has been emphasized that in the neuromuscular patient, the neuroscience nurse should develop a theory of knowledge in both neuro and pulmonary sciences [12]. The neurological nurse should also be knowledgeable in relation to the disease process. The most prominent feature of GBS is muscle weakness occurring bilaterally, motor paralysis that involves the respiratory muscle and sensory disturbances [13].

Section Two: Nurses' knowledge toward nursing care of GBS

The results of (Table 3) were non-significant in almost all of the items, because GBS is an uncommon, idiopathic disease which presents multiple nursing challenges [7]. Table (3) also reflects the significance of the items (1, 8, 9) which pointed out the main nursing care of GBS and the care provided in case of constipation and urinary retention, besides the importance of physical therapy to help children with GBS. This result agrees with a study which discussed nursing care of autonomic dysfunction that the bladder dysfunction is usually seen in GBS patient. So, continuous catheterization is indicated until the patient regain muscle tone and cleaning are important [14]. The important one of nursing care is physical therapy and limited at first by passive range of motion exercise during evolving phase [15]. The nurses' knowledge is good in relation to the main nursing care of GBS, nursing care of constipation, urine retention, and physical therapy. Nursing input can be of value by providing support, information, explanations, and empathy to reassure the patients and the family. A great understanding of the nature and course of disease and its ramification can lead to more effective nursing management and a faster rehabilitation process [16].

The results of the study revealed that there was no significant association between nurses' knowledge related to the general information and nursing care and gender, years of experiences in neurological ward and RCUs, and training session. Also, there was a highly significant association between nurses' knowledge and their level of education and years of employment as a nurse in general hospital, and there was a significant association between nurses' knowledge related to general information and age, marital status, but there was no significant association between nursing care and age, marital status at $P \leq 0.05$.

Part four: Discussion of level of the nurses' knowledge in related to general information and nursing care

Table (8 a) and (8 b) revealed that 80% of nurses has poor knowledge related to general information and nursing care. This might be due to the syndrome is new and rare disease, and has more than one variants. One study disagrees with the study results which mentioned that the nurse most anticipated complications and explains these to patients and their families [11]. The neuroscience nurses can make a difference in the recovery of their patients by anticipating potential complications and attending to their special needs during the acute and recovery phases of their illness. A side from physical care, it is crucial to be able to support and teach the patients and their families about GBS [17]. The management can be challenging and even with most expert care and modern intensive care facilities the mortality remains at 5-8% [18]. The care of the patient with GBS is challenging for the health care team. By incorporating both physical and psychological care for

the patient with GBS, the critical nurse can adapt to the changing plan of care that accompanies this diagnosis [19].

Recommendations

1. Special training session should be done and constructed for nurses working with Guillain-Barre syndrome to build and reinforce the base, and essential knowledge of GBS.
2. The nurses who work in neurological wards and RCUs must be involved in continuous education about GBS to maintain their knowledge about disease.
3. Providing scientific booklets, publication, lectures, guideline, and journal about Guillain-Barre syndrome in Arabic and English language and distributing them among nurses who are providing care to children with GBS.
4. Increasing the numbers of the professional, young, college graduated nurses to work in neurological wards and RCUs.

References

1. Coyle, P.: Guillain-Barre Syndrome, Spring, 2002, news/Events/communicator medical article achieve.

2. Miller, A.: Guillain-Barre Syndrome, Dec 19, 2007, P.P.1-11.

3. Bucher, L. and Melander, S.: **Critical Care Nursing**, Philadelphia: W.B. Saunders Company, 1999, P.P.901-912.

4. Steinberg, J.: **Guillain-Barre Syndrome and CIDP: An Overview**, 9th edition, GBS/CIDP Foundation International, 2000, P.P.3-44.

5. Polit, F. and Hungler, P.: Nursing Research: Principles and Methods, 6th edition, Philadelphia: Lippincott, 1999, P.P.412-416.

6. Hobdell, E.: Hypotonia in Infants and Children, **Neurosurg Nurs**, 1982, 14(4): P.P.170-2.

7. Parobeck, V.; Burnham, S. and Laukhuf, G.: An unusual Nursing Challenge GBS Following Cranial Surgery, **J Neurosci Nurs**, 1992,; 24(5): P.P.251-5.

8. Gregory, R.: Recovery from Depression Associated with Guillain-Barre Syndrome, **Issues Ment Health Nurs**. 2003, 24(2): P.P.129-35.

9. McMahon, P. and Cornock M.: Guillain-Barre Syndrome: Biological Basis, Treatment and Care, **Intensive Crit Care Nurs**, 1997, 13(1): P.P.42-8.

10. Toft, C.: Guillain-Barre Syndrome A case Study, **Accid Emerg Nurs**, 2002, 10(2): P.P.92-102.

11. Griswold, K.; Guanci, M. and Ropper, A.: An approach to the Care of Patients with Guillain-Barre Syndrome, **Heart Lung**. 1984, 13(1): P.P.66-72.

12. George, M.: Neuromuscular Respiratory Failure: What the Nurse Knows May Make the Difference, **J Neurosci Nurs**. 1988, 20(2): P.P.110-7.

13. Rupport, S.; Jeanette, G. and Joan, T.: **Dolan's Critical Care Nursing**, 2nd edition, Philadelphia, F. A. Davis Company, 1996, P.P.634-639.

14. Clochesy, J.; Christine, B.; Suzette, C.; Ellen, B. and Rudy, A.: **Critical Care Nursing**, 2nd edition, Philadelphia: W.B. Saunders Company, 1996, P.P.831-845.

15. Whaley, L. and Wong, D.: **Nursing Care of Infant and Children**, 5th edition, St.Louis; Mosby, 1994, P.P.1884-1885.

16. Gregory, M.; Gregory, R. and Podd, J.: Understanding Guillain-Barre Syndrome and Central Nervous System involvement, **Rehabil Nurs**. 2005, 30(5): P.P.207-12.

17. Kehoe, M.: Guillain-Barre Syndrome: A patient Guide and Nursing Resource, **Axone**, 2001, 22(4): P.P.16-24.

18. Hahn, A.: Management of Guillain-Barre Syndrome, **Baillieres Clin Neurol**. 1996, 5(3): P.P.627-44.

19. Haldeman, D. and Zulkosky, K.: Treatment and Nursing Care for A patient with Guillain-Barre Syndrome, **Dimens Crit Care Nurs**, 2005, 24(6): P.P.267-72.