Impact of a Designed Nursing Teaching Protocol on Quality of Life of Patients with Chronic Lower Limb Ischemia at Assiut University Hospital

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Abstract
Chronic lower limb ischemia is a prevalent systemic atherosclerotic disease that impairs a patient's quality of life and untreated disease can lead to limb loss. The **aim** was; to evaluate the impact of a designed nursing teaching protocol on quality of life of patients with chronic lower limb ischemia. **Research hypotheses;** Participants will have less disease symptoms as compared to prior application of nursing protocol, The functional capacity will improve as presented by ankle brachial index, The knowledge of studied patients after application of nursing protocol will be higher than their knowledge before protocol, and quality of life of participants will improve. **A quasi – experimental research design** was utilized. The study was conducted at vascular surgery department and its outpatient clinics of Assuit University Hospital. **A convenience sample** of sixty adult male and female patients. **Tools** for data collection; **tool I** "Patients' structured assessment sheet", **tool II** "Vascular quality of life questionnaire". The control group exposed to routine hospital care and assessed two times by using tool I and tool II. While study group patients received the contents of the designed nursing teaching protocol and assessed two times also by using the same tools. Data was collected & analyzed. **Results** concluded that; all patients in both groups were having unsatisfactory level of knowledge about disease in the time of admission. While in the time of follow up; the control group still had unsatisfactory level of knowledge and most of the study group patients became having satisfactory level of knowledge which reflected into their quality of life. As their quality of life became good. Theses study findings documented that; the more information the patient is provided the better equips to manage this chronic disorder**.**
Keywords: Nursing teaching protocol, Quality of life, Chronic lower limb ischemia.

1. Introduction

Peripheral vascular disease is commonly used to refer to peripheral arterial disease (PAD) outside the heart and brain. Arterial disorders represent the most common cause of morbidity and death in western societies. The disease prevalence increases with age and 12-20% of Americans age 65 and older (4.5 to 7.6 million) have PAD. As the population ages, the prevalence could reach 9.6 to 16 million in those age 65. Chronic lower limb ischemia known as peripheral arterial disease. (Rutherford, 2010).

Ischemia is a condition in which there is inadequate blood flow and oxygen to a specific part of the body. It can occur in any muscle group, organ, or tissue in the body. For example, in the lower extremities, ischemia can cause claudication in peripheral arterial disease (PAD) or may cause critical limb ischemia (CLI) in severe cases. In the heart, ischemia can cause angina or a heart attack; in the brain, ischemia may cause stroke or transient ischemic attacks and; in the intestines it is known as mesenteric ischemia and can cause severe abdominal pain. (Gey & Manngold, 2008)

The manifestations of chronic lower limb ischemia usually include some type of pain; they range from no symptoms to intermittent claudication to critical limb ischemia. The common major manifestations of CLI are; rest pain, ischemic ulceration, or gangrene of the forefoot or toes. Walking is a fundamental human requirement. Ischemia is the most common cause of loss of normal walking ability seen by the vascular specialist. In addition to affecting the legs, it is associated with high systemic morbidity and mortality. (Hirsch, 2009)

Diagnosis of lower limb ischemia is typically based on the present history, physical findings, and diagnostic procedures such as ankle brachial index, doppler ultrasound, angiography, computed tomography, and magnetic resonance angiography. Treatment of lower limb ischemia is: risk factors modification, pharmacological therapies, endovascular intervention such as angioplasty and surgery. The overall goals of treatment are to reduce symptoms, improve quality of life, and prevent complications. (Linsky, 2010)

Quality of life (QOL) is the degree of wellness felt by an individual. Is generally considered a composite of two broadly defined domains: physical and psychological. Amore specific use of the term is health related (QOL) which focuses on changes in physical and mental health domains that may cause diseases. Although it can be hard to isolate non–health-related factors influencing overall QoL. (Silven, 2007).

The nurse can improve the patients' quality of life by teaching patients about methods of controlling

pain associated with peripheral arterial disease, giving them health teaching about risk factors modification, exercise programs that improve peripheral arterial circulation, and provides care to the patients who will undergo surgical or interventional procedures. Also the nurse ensures that the patient has the knowledge and the ability to assess for potential complications. (Pudner, 2010)

2.   Aim of the study

This study aimed to evaluate the impact of a designed nursing teaching protocol on quality of life of patients with chronic lower limb ischemia at Assiut University Hospital.

3.   Hypotheses

- Participants will have less disease symptoms or problems as compared to prior application of nursing teaching protocol.
- The functional capacity will improve as presented by ankle brachial index.
- The knowledge of studied patients after application of nursing teaching protocol will be higher than their knowledge before application of protocol.
- Quality of life of participants will improve.

4.   Patients and method

4.1   Research design

A quasi – experimental research design was utilized in this study.

4.1.1   Variables

The independent variable in this study was the designed nursing teaching protocol for patients with chronic lower limb ischemia. While the dependent variables were the patients' quality of life and their knowledge about chronic lower limb ischemia.

4.1.2   Setting

The study was conducted at vascular surgery department and its outpatient clinics of Assuit University Hospital.

4.1.3   Sample

A convenience sample of sixty adult male and female patients diagnosed with chronic lower limb ischemia divided equally into two groups, study and control group (thirty for each) with the following inclusion criteria: Moderate to severe claudication and/or critical limb ischemia, treated conservatively, with Percutanous transluminal angioplasty(PTA) and/or bypass surgery, agreed to participate in the study. And excluded for the following: Sever cardiac (heart failure, recent ischemic attack and myocardial infarction), Cerebro vascular abnormalities (transient ischemic attack, cerebro vascular accident), and previous endovascular procedures as percutaneous tranluminal angioplasty or vascular surgery.

4.1.4   Tools for data collection

Tool I: "Patients' structured assessment sheet"

This tool was developed by researcher to assess the patients' condition it consists of three parts:

- **Part one**

It was developed to assess the patients' sociodemographic characteristics as name, age, sex, marital status, occupation and education.

- **Part two (medical data)**

It includes structured items to identify the patients' needs.

- **Part three**

Assessment of patients' knowledge about chronic lower limb ischemia. By open and closed end questions.

Tool II "Vascular Quality of Life Questionnaire" (Morgan et al, 2001)

It is a disease specific quality of life measure developed at London- Kings college hospital to assess patients with chronic lower limb ischemia adopted for use in this study. It includes 25 items in the following domains: activity domain, symptom domain, Pain domain, emotional domain, and social domain. **First domain: "activity domain"** This domain has a relation to activity of daily living. The questionnaire handled it in the form of the patients' ability to exercise, play sports, to climb stairs, to do routine house work, go shopping, or carrying bags.**Second domain "symptom domain":** This domain has a relation to the symptoms that the patients were suffering from it as coldness, tiredness, numbness, ulcers, or sores on the legs. **Third domain "pain domain":** This domain considers as a symptom domain but the questionnaire handled it as a unique domain as patients may be presented by a varying degree of pain. **Fourth domain"emotioal domain":** This domain contains number of questions about positive and negative feelings, self esteem, body image, physical appearance, personal beliefs and ability to concentrates. **Fifth domain" social domain"** This domain is related to personal relationship and social support.

4.2   Operational design

It includes preparatory phase, field work phase" implementation phase" and evaluation **phase.**

4.2.1   Preparatory phase

This phase started by review of current and past ,local and international related literatures as text books ,articles ,journals, periodicals and magazines was done, study tools were formulated, and this phase ended by contents validity and pilot study.

- **Content validity**

Content validity was done by five expertise (two nursing staff) from the medical surgical nursing field and (three vascular surgeons specialists) from the medical field to test contents, clarity and comprehensiveness of the tools.

- **Pilot study**

Pilot study was conducted on 10% (6 patients) of sample to evaluate the applicability and clarity of the tools, estimate the time needed for data collection, and test the feasibility of conducting the research after analyzing the pilot study results.

4.2.2   Field work "implementation phase"

An official letter was issued from the Dean of the faculty of nursing to head of Assuit university hospitals and the head of the vascular surgery department as well as from the director of outpatient clinics. The researcher met vascular surgeons' specialists for explaining the purpose of the study to gain their cooperation.

- **Ethical consideration**

At initial interview, each patient was informed with the purpose of the study. And the researcher emphasized that the participant is voluntary and confidentiality and anonymity of the subjects will be assured through coding of all data.

The control group was interviewed and assessed two times by using tool I and tool II. First assessment was done for all patients who would undergo either PTA or bypass upon their admission. Second assessment was done after six months for all patients. This group of patients had exposed to routine hospital care. While study group exposed to the designed nursing teaching protocol in the form of small teaching sessions that was implemented according to their management.

4.2.3   Evaluation phase

Evaluation phase was carried out through introducing tool "I" , and tool "II" for all studied sample "both control and study group" to distinguish between control and study group and between the initial assessment of studied group and their assessment at the time of follow up after six months after application of the designed nursing teaching protocol.

4.3   Statistical design

Data was collected and analyzed using the following tests frequency, percentage, mean, and standard deviation. A probability level of 0.05 was adopted as a level of significance for testing the research hypothesis.

5. Results

Table (1): Distribution of studied sample (both control and study groups) as regarding to their sociodemographic characteristics.

Characteristics	Control group (n=30)		Study group (n=30)	
	No	%	No	%
Age (years):				
< 40	1	3.3	3	10
40 – 50	3	10.00	4	13.3
50 – 60	12	40.00	12	40.00
60 & above	14	46.7	11	36.6
Mean ± SD	61.30 ± 9.87		58.16 ± 12.47	
Sex:				
– Male	18	60.00	21	70.00
– Female	12	40.00	9	30.00
Residence:				
– Rural	28	93.3	21	70.00
– Urban	2	6.7	9	30.00
Marital status:				
– Single	1	3.3	1	3.3
– Married	20	66.7	23	76.7
– Divorced	-	-	-	-
– Widow/widew	9	30.00	6	20.00

Table (1) shows that; the highest percent of age of both control and study groups were from fifty to sixty and more years old. Also there was a predominance of male in both control and study groups (60% and 70%

respectively).

Table (2): Distribution of studied sample (both control and study groups) as regarding to associated systemic disorders in the time of admission.

Systemic disorders	Control group (n=30)		Study group (n=30)		P-value
	No	%	No	%	
Cardiac disorders					
– Yes	11	36.67	8	26.67	0.117
– No	19	63.3	22	73.3	NS
Neurologic disorders					
– Yes	9	30.00	5	16.67	0.262
– No	21	70.00	25	83.3	NS

N.S. = Not significant.

Table (2) shows that; there was no significant difference between two groups as regarding to associated systemic disorders.

Table (3): Distribution of studied sample (both control and study groups) as regarding to their risk factors at admission.

Risk factors	Admission				
	Control group (n=30)		Study group (n=30)		P-value
	No	%	No	%	
Family history					
– Yes	10	33.3	15	50.00	P= 0.083
– No	20	66.7	15	50.00	NS
Smoking					
– Yes	15	50.00	13	43.3	P= 0.259
– No	15	50.00	17	56.7	NS
Hypertension					
– Yes	16	53.3	13	43.3	P= 0.372
– No	14	46.6	17	56.7	NS
Diabetes Mellitus					
– Yes	19	63.3	20	66.7	P= 0.835
– No	11	36.7	10	33.3	NS

N.S. = Not significant.

Table (3) reveals that; among the thirty patients in control group; ten (33.3%) patients were having family history of chronic lower limb ischemia, smoking was detected in half (50%) of patients. Nineteen (63.3%) patients were diabetics and systemic hypertension presents in sixteen (53.3%) patient. While in study group; half of patients were having family history of chronic lower limb ischemia, thirteen (43.3%) patient were smokers and hypertensive. Twenty (66.7%) patient were diabetics.

Table (4): Comparison between the time of admission and follow up for risk factors of both control and study groups.

Risk factors	Control group (n=30)				P-value	Study group (n=30)				P-value
	Pre protocol		Post protocol			Pre Protocol		Post protocol		
	No	%	No	%		No	%	No	%	
Smoking					P= 0.382					
– Yes	15	50.00	14	46.67	NS	13	43.3	5	16.7	< 0.001**
– No	15	50.00	16	53.33		17	56.7	25	83.3	
Hypertension										
– Controlled	2	12.5	2	12.5	-	-	-	8	61.53	< 0.01*
– Not controlled	14	87.5	14	87.5		13	100	5	38.46	
Diabetes Mellitus										
– Controlled	3	15.78	-	-	-	2	10.00	-	-	-
– Not controlled	16	84.21	-	-		18	90.00	-	-	

NS= Not Significant.

*= Mild significant**.**

= Moderate significant.

Table (4) illustrates that; According to control group: there was a minimal changes in number of smokers after protocol application than before application, the percent of hypertensive patients (controlled-uncontrolled) remain the same as before protocol. According to study group: most of patients (83.3%) became nonsmokers. And more than half of hypertensive patients their blood pressure became controlled. There was significant difference between two times (pre protocol- post protocol) for the study group regarding to their risk factors (smoking – hypertension).

Table (5): Distribution of studied sample (both control and study) as regarding to signs and symptoms.

Signs and symptoms	Control group (n=30)				P-value	Study group (n=30)				P-value
	Pre protocol		Post protocol			Pre protocol		Post protocol		
	No	%	No	%		No	%	No	%	
Intermittent claudication										P=<0.02*
– Present	7	23.33	3	10.00	P=0.275	9	30.00	-	-	
– Absent	23	76.67	27	90.00	n.s	21	70.00	30	100	
Rest pain										*** P=<0.0001
– Present	23	76.67	4	13.33	P< 0.03*	28	93.3	1	3.3	
– Absent	7	23.33	26	86.67		2	6.7	29	96.7	
Ulceration										P=<0.01*
– Present	13	43.33	5	16.67	P=0.02*	11	36.7	4	13.3	
– Absent	17	56.67	25	83.33		19	63.3	26	86.7	
Gangrene										*** P=<0.0001
– No	9	30.00	26	86.67	P<0.01*	11	36.7	27	90	
– Dry	12	40.00	2	6.67		11	36.7	3	10	
– Wet	9	30.00	2	6.67		8	26.67	-	-	

N.S. = Not Significant.
*= Mild significant**.**
***= Highly significant.

Table (5) illustrates that; before protocol application: small number of patients in both control and study groups presented by intermittent claudication (23.33%, 30 % respectively). Most of control and study group patients had rest pain (76.67 %, 93.3% respectively). Ulceration was apparent in less than half of both control and study group (43.33%, 36.7% respectively). And finally the total number of patients in control group who had gangrene was twenty- one (70%) patient. after protocol application after six months: the percent of all signs and symptoms of the study group that they were having were less than the percent of control group.

Figure (1): Pre-intervention (medical management) ankle brachial index measurement in both (control & study groups) in the time of admission.
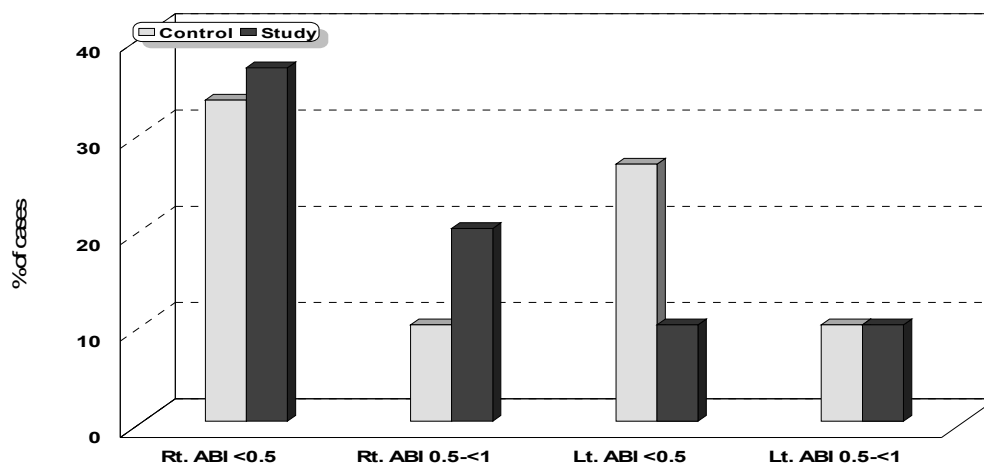

Figure (1**)** reveals that; According to the ABI of the right side; more than one third of control & study group patients their ABI were less than half(33.33%, 36.67% respectively) and only three (10%) patients in control group and six (20%) patients in study group their ABI were from 0.5 to less than one.

According to the ABI of the left side; there was more than one fifth of control group and only about one tenth of the study group their ABI was less than half. And less than one tenth of both control and study group their ABI was from 0.5 to less than one.

Table (6): Post-intervention (medical management) ankle brachial index measurement for control and study group in the time of follow up after six months.

Ankle brachial pressure index (ABI)	Follow up				P-value
	Control group (n=30)		Study group (n=30)		
	No	%	No	%	
Right side ABI Improved Decreased No change	8 4 1	61.53 30.76 7.69	12 4 1	70.58 23.52 5.88	P<0.03*
Left side ABI Improved Decreased No change	5 6 -	45.4 54.5 -	5 1 -	83.33 16.67	P=0.271 n.s

N.S. = Not Significant.
* = Mild significant**.**

Table (6) indicates that; more than half of control group and nearly less than three quarter of the study group patients their right ABI improved at the time of follow up than the time of admission. There was significant difference between control and study group patients according to their ABI in the right side. Less than half (45.4%) of control group and most (83.33%) of the study group their left ABI improved at the time of follow up than the time of admission. There was no significant difference between two groups according to their ABI in the left side.

Figure (2): To n,tal score of patients' knowledge about chronic lower limb ischemia before and after protocol application.
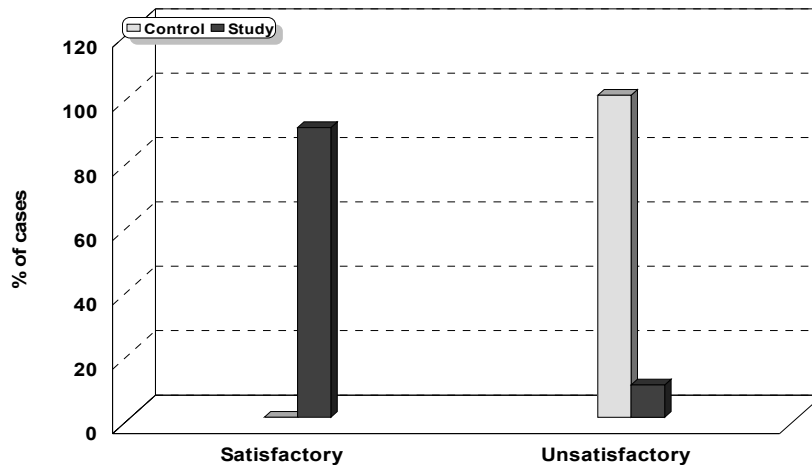

Figure (2) reveals that; there was highly statistical significant difference between two times (Pre protocol- post protocol) for study group patients regarding to their level of knowledge.

Fig (3): Total score of vascular quality life for both groups (control & study) before and after protocol application.
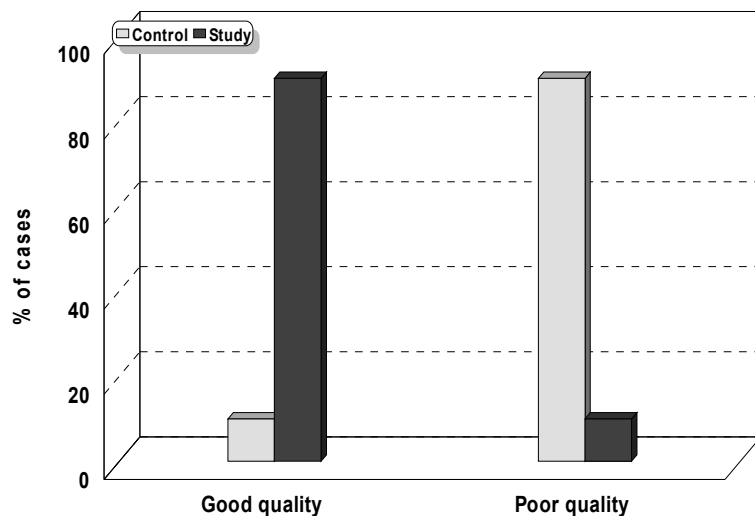

Figure (3) shows that; there was no significant difference between two times (pre protocol-post protocol) for control group regarding to their quality of life. There was highly statistical significant difference between two times (pre protocol & post protocol) for the study group regarding to their quality of life.

6.   Discussion

The present study showed that; More than half of patients in both groups were male and their age were above fifty years old with a mean age of fifty nine years old. This study finding was in the line with a study conducted at vascular surgery department of Assuit University Hospital by Abdel Salam, (2005) entitled as "endovascular interventional surgery for peripheral arterial occlusive disease of the lower extremities on patients with chronic lower limb ischemia" which revealed that; the age of studied sample was above fifty years old too and male presented a higher incidence than female. This also was supported by (Higgins, 2006 and Mohamed, 2000).

According to Pudner, (2010) who stated that symptomatic chronic lower limb ischemia is commoner in men, the incidence being twice as high as than women. And rationalized for this difference as female sex hormones are thought to account for this difference, as symptomatic disease is more common post menopause.

As regard to associated systemic disorders; it was found that patients in both groups were suffering from associated systemic disorders in the form of cardiac disorders as hypertension and old myocardial infarction. Another associated systemic disorder that the patients were suffering from it was old cerebrovascular accident. This study finding was supported by Bradbury, (2010) who stated that peripheral arterial occlusive disease rarely presents in isolation and patients will often have accompanying coronary, cerebrovascular, and renal diseases.

As regard to risk factors Ostchega et al, (2007) stated that risk factors modifications is fundamental to the treatment of peripheral arterial occlusive disease and emphasized that management should aggressively address the control of modifiable risk factors including tobacco use, hypertension, and diabetes. The present study revealed that; in the time of admission before application of the designed nursing teaching protocol; smoking was detected in half of the control group and in less than half of the study group patients.

Regarding hypertension and diabetes mellitus; more than half of control group had hypertension and most of them their blood pressure were uncontrolled and less than half of the study group had uncontrolled blood pressure. Regarding diabetes mellitus; it was found that more than three fifths of both control and study groups had diabetes mellitus and most of them had uncontrolled blood sugar. These study findings are nearly similar to Ahmed, (2003) who carried out a study at vascular surgery department of Assuit University hospital entitled as " endovascular techniques (balloon dilatation stenting and endografting)" which revealed that smoking was apparent in more than two thirds of the studied sample (68%), diabetes in more than half of the sample, and hypertension in less than half of the sample. Multiple authors (timaran et al, 2003) have reported that; the most frequent associated comorbid condition in their series were smoking in most of the sample, hypertension in less than three quarters of the sample, and diabetes in less than one third of the sample.

However after protocol application after six months, the researcher observed that the number of patients in control group who still smoke increased and number of patients who had hypertension still the same while in study group; most of patients became didn't smoke and only five patients still had uncontrolled hypertension. This difference between two groups could contribute to the effect of the designed nursing teaching protocol.

Regarding diabetes mellitus; it was difficult to do follow up for all patients at the time of follow up as there was no blood sugar set and lancets in outpatient clinics and physicians didn't ask laboratory blood glucose test and when the researcher asked the physicians; they said that "this out of their responsibilities" but the researcher advised the patients to go to endocrinology and cardiology physicians to control their blood sugar and blood pressure and this will emphasize the concept of integration and integrated medicine.

According to Fontaine, (2005) who classified chronic ischemia according to clinical presentation into four stages; asymptomatic (stage I), intermittent claudication (stage II), rest pain (stage III), ulceration and/or gangrene (stage IV). With analysis of signs and symptoms in the present study; it is observed that; the highest percent in both groups presented by stage three and four and only small number presented by stage II and no one came to the vascular surgery department by stage one.

According to Ridker, (2007) who supported this study finding by explaining that the true prevalence of peripheral arterial disease has been difficult to determine because most patients are asymptomatic or the symptoms are atypical and many patients may don't report them, especially in diabetics as presence of neuropathy blunts pain perception and makes sever lesions than in non diabetic patients. When the researcher taked the medical history from the patients; most of patients said that "they went to several physicians for seeking about their condition as orthopedic surgeons, and general surgery physicians, and lastly came to the vascular surgeons or their outpatient clinics by presented late stages (III and IV).

However at the time of follow up it was found that the signs and symptoms of control group didn't improve while the study group returned by less signs and symptoms. This could be contributed to the effect of the designed nursing teaching protocol.

As regard to functional status that measured by (ankle brachial index) ABI; multiple authors **(Allison et al, 2010)** reported that; the ABI is non invasive test to monitor patients with peripheral arterial disease. The normal ABI $\geq$ 1.00, ABI for patients with claudication= 0.5-0.9, and ABI for patients with rest pain and critical leg ischemia $\leq$ 0.5. In the this study at the time of admission it was found that there was no one had normal ABI in both groups in both sides. More than half of control group and less than half of study group their ABI were less than o.5 in both sides. And only small number in both sides of two groups their ABI were from 5- < 1.

With monitoring for ABI at the time of follow up after six months it was found that most of both right and left sides of study group patients their ABI improved, only small number of study group their ABI decreased versus that occurred in control group patients; the number of patients that their ABI level decreased were higher than their ABI improved. This difference between two groups could be explained by that the study group patients followed the instructions in the designed nursing teaching protocol that maintain the patency of the affected side. The results of the present study before protocol application showed that; all patients in both control and study groups had unsatisfactory level of knowledge about chronic lower limb ischemia. This could be explained by the fact that, patients didn't receive enough information from health care providers. Some patients were lacking interest, and didn't know any information. While others were eager to know but they didn't find the person who had enough time to provide them with enough information. This in the line with a study conducted at Alexandria university hospital by El-Sebasi, (1984) entitled as "Nursing care program for patients with ischemia of the lower limbs managed conservatively in the main Alexandria university hospital" which revealed that; the majority of patients didn't have enough information about this disease "chronic lower limb ischemia".

However post implementation of the nursing protocol; there was highly statistical significant difference between two times (pre protocol-post protocol) for the study group regarding to their knowledge. This study finding was in the line with Ali, (2004) who carried out a study to investigate the impact of a designed nursing intervention protocol on performing self care activities among arthritic women. This study found that all studied sample were lacking knowledge about their disease at the initial assessment, however after application of the nursing intervention protocol of the study; it was found that; there was a significant increase in patients' knowledge regarding disease.

Physicions most commonly use physical findings and laboratory data to characterize disease process of condition.

This information is essential for appropriate diagnosis and treatment, but doesn't reveal the manner and severity of the symptoms experienced by patients. Rutherford, (2005) said that complete assessment of the effectiveness of vascular intervention requires evaluation of not only the changes in the patients' clinical status. But documentation of an improvement in patients' quality of life and personal productivity is equally importation.

The present study handled the part that put the patients' quality of life in consideration by using disease specific questionnaire for chronic lower limb ischemic patients. This tool consists of five domains; activity, symptoms, pain, emotional, and social domain. The results of the present study showed that; most of patients in both groups had poor quality of life in the initial assessment at the time of admission before application of the designed nursing teaching protocol. These study findings are in the line with Abd El-fatah, (2013) who did assessment for QOL of hypertensive elderly patients at Sohag university hospital and found that; there was a decrease in the quality of life score among the studied patients.

With analysis of domains of quality of life it has been found that; According to control group; the level of activity domain and symptom domain decreased at the time of follow up than their level at the time of admission. The researcher explain that by supposing that; those two domains have effect on each other as that said before; most of our patients presented by rest pain, and ulcers or gangrene so their activity levels in the form of stair climbing, going to pray in the mosque decreased. On the other hand there was slight change (increased) in the levels of pain, emotional, and social domains at the time of follow up than their level at the time of admission.

According to the study group; it was found that; there were obvious changes in all domains of quality of life as their level increased at the time of follow up than their level at the time of admission. And this could be attributed to the effect of the designed nursing teaching protocol.

7.   Conclusion

Most of the study group patients returned by less signs and symptoms and their ABI improved in the time of follow up than control group. Also the mean score level of knowledge of the study group patients in the time of follow up was higher than the mean score level of knowledge of control group patients who didn't receive the protocol. Which reflected into their quality of life. As most of the study group patients became having good quality of life.

8.   Recommendation

−   Every effort is made to detect the disease at an early stage,

−   Assess associated risk factors, and provide better long-term care.

−   Integration with other medical departments is needed for the provision of care for those patients as those patients suffered from associated systemic disorders.

−   Stress on the patient based outcomes approach in conjunction with clinical end points that raise the standard of care.

−   Establishment of continuous health education program at vascular surgery department & its outpatient clinics to provide health teaching using booklet & illustrated pamphlets for each patient especially those who can't read and write as a high percentage in the present study were illiterates.

−   The discharge planning process needs to be stated clearly for nurses & they should be aware by their professional responsibilities.

−   Similar studies should be replicated on longitudinal basis to assess the compliance and patients' quality of life using the disease –specific quality of life questionnaire.

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