Effect of Educational Program on Compliance of Patient with Lower Limb Ischemia Regarding Therapeutic Regimen

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ABSTRACT

It is very important for the patient to engage in plenty of ongoing education as well. The needs of vascular patients continue with education and there are improve compliance about their conditions. The education of patient never stops as they are required to continually acquire skills and education throughout their life. **This study aimed to** evaluate the effect of educational program on compliance of patient with lower limb ischemia regarding therapeutic regimen. **Research hypotheses**:Do an educational program affect positively on compliance of patients with lower limb ischemia?**Design:** a quasi-experimental research design was used. **Setting:** Data were collected from outpatient vascular clinic and general surgery department, ward 7 at Ain Shams University Hospitals. The study was conducted on 84 patients, who have been selected to the program pre, post, after 3and 6 months later. **Data tools**: four tools were used for data collection(I) patient knowledge assessment interview sheet, divided into three parts: (A) Bio-social demographic data, (B) Medical characteristic data, (C) Patients knowledge sheet, (II) Patient leg assessment sheet, (III) Observational check list for foot care, (IV), Patients compliance assessment questioner sheet "pre, immediately post, after 3 and 6 months of program implementation. **Result:** this study revealed that statistically significant differences regarding patients' knowledge, foot care practice and compliance toward chronic lower limb ischemia at all program phases. So, this study **concluded that** the educational program was effective positively regarding compliance of patients with chronic lower limb ischemia which indicates justification of the study hypothesis. Theirfor,**study recommended that**: an educational program should be developed for patients at every time with continuous update education.

Key Words: Chronic Lower Limb Ischemia, Therapeutic Regimen, Educational Program

INTRODUCTION

Chronic lower limb ischemia (CLI) is a restriction of blood flow due to arterial stenosis or occlusion often lead to complaints of muscle pain on walking (intermittent claudication) ranged from mild claudication to rest pain. The arterial narrowing or obstruction that occurs as a result of the atherosclerotic process reduces blood flow to the lower limb during exercise or at rest. **Robert, (2013).**

The estimated annual incidence of CLI ranges from 500 to 1000 new cases per 1 million populations, with a higher incidence among patients with diabetes. The frequency of CLI is strongly age related, uncommon before 50 years, rising steeply at older ages. In a recent study in Germany the prevalence of symptomatic and asymptomatic CLI in men aged 45–49 years was 3.0%, rising to 18.2% in those aged 70–75 years, corresponding rates for women were2.7% and 10.8%. Incidence is also higher in people who smoke people

with diabetes and people with coronary artery disease. **Baser, Verpillat, Gabriel, & Li Wang, (2013) and Tendera, Aboyans, Bartelink, Baumgartner,&Clément, (2011).**

Also; the prevalence of CLI in the general population is 12–14%, affecting up to 20% of those over 70 years; 70%–80% of affected individuals are asymptomatic; only a minority ever require revascularization or amputation. CLI affects 1 in 3 diabetics over the age of 50. In the USA peripheral arterial disease affects 12–20 percent of Americans age 65 and older. Approximately 10 million Americans have a CLI. The incidence of symptomatic CLI increases with age, from about 0.3% per year for men aged 40–55 years to about 1% per year for men aged over 75 years. The prevalence of CLI varies considerably depending on how PAD is defined, and the age of the population being studied. **Allison, Denenberg & Criqui, (2011).**

Patients' compliance to treatment is an important indicator for evaluating the successful management in their conditions. Which can prevent many complications can occur; maintain physical, psychological and social wellbeing. The patients treatment compliance needsfor life, so health professionals can improve compliance by tailoring their communications according to the individual patient's knowledge, understanding, beliefs, preferences, needs and circumstances; and maintaining motivation by emphasizing the role of therapy in reducing vascular risks. **Shah, Hirsch, Zacker, Taylor, & Wood, (2009**).

The aspects of a therapeutic regimen can include medication, procedures, and lifestyle changes. Patients may need surgery, dietary modifications, or other treatments to successfully address an illness. Care providers also need to consider limiting factors like knowing

allergies to medications, or concerns expressed by the patient about the ability to follow some aspects of the plan. Even if a treatment is medically indicated, if the patient cannot comply with it, it may not be an appropriate addition to a therapeutic regimen. The patient might need education to learn how to enact some parts of the plan, such as training from a nurse to effectively track symptoms in therapy. **Takala, Niemelä, Rosti & Sievers,(2014**).

The vascular nursing staff plays a vital and important role in providing care to prevent complications and bad prognosis; so the first step of care is; History and initial physical examination. The onset of disease process needs to be known to help differentiate chronic limb ischemia from acute limb ischemia, the nurse takes complete vascular evaluation include evaluation of arterial diseases on other sites as carotid and coronary arteries. Global risk factors for atherosclerosis, and history of trauma or other incident that may have caused skin breakdown, pulse palpation is one aspect of the physical examination for diagnosing CLI, assess capillary refill time, and calculate the ankle brachial index. **Ikem, Adebayo. & Soyoye, (2011).** Sadly though, the large majority of the cases of chronic lower limb ischemia remains undiagnosed or, worse still, are misdiagnosed. Patients with limb pain are labeled as 'sciatica' or 'arthritis' without examination of peripheral pulses. Some of them deteriorate considerably and present with gangrene/tissue loss. **Goodney, Travis, & Nallamothu, (2012).**

Chronic limb ischemia has a 3-fold higher than cardio vascular disease morbidity and mortality, and it can cause physical, social, psychological and financial burden for the patient and their family, therefore this research could provide health professionals with an depth understanding related to such patients which could be reflect positively on patient

outcomes through assessing and providing required care and teaching for such patient about how to deal with and prevent of complications occurred from CLI. Hopefully working of this study will help in positive improvement of patient condition.

Aim of the study:

The aim of this study was to evaluate the effect of educational program on complianceof patientswith lower limbischemia regarding therapeutic regimen through the following:- 1- Assessing of patient compliance level regarding therapeutic regimen of lower limb ischemia2- Developing and implementing educational program based on patient assessment needs.3- Evaluating the effect of educational program on compliance of patient with lower limb ischemia regarding therapeutic regimen.

Research Hypothesis:

The current study hypothesized that; Do an educational program affect positively on compliance of patients with lower limb ischemia?

2- Subjects and methods:

Research design: A quasi-experimental design aiming to evaluate the effect of educational program on compliance of patient with lower limb ischemia regarding therapeutic regimen through assessing patient compliance level regarding therapeutic regimen, develop and implement an educational program based on assessment needs and evaluate the effect of educational program on patient compliance**.**

 - Setting: The study was conducted at outpatient vascular clinic and general surgery department, ward 7 at Ain Shams University Hospitals**- Sample:** A Purposive sample of 84 patients was included in the study after explaining the

aim of the study and obtaining their consent.The sample size was determined by statistical analysis (power analysis) where it represents the total number of patients who are diagnosed with chronic lower limb ischemia in general surgery department- ward 7 and outpatient vascular clinic of the Eldmerdash Surgical Hospital at year 2011 were 280 patients.

Tools of data collection:

Four tools were used:

1- **Patients knowledge assessment interview questioner sheet***:* It wasdivided into three parts**:**

Part one: The Biosocial-demographic data of the patients under study such as: It covers (age, gender, marital status, level of education, employment, place of residence and financial support).

Part two: Medical characteristic data: It covers (past, present medical history and family history).

Part Three: Patients knowledge sheet: Developed by the researcher, it was designed to assess knowledge of patients regarding chronic lower limb ischemia (pre, immediately post, 3month & 6 months later after program implementation). The sheet consists of 24 questions, in the form of multiple choice questions (MCQs). These items were adapted from.**Hirsch, Haskal, & Hertzer, (2006).***Scoring system:* It contains (24) multiple-choice questions with total (93) grades. The correct response scored =1 and the incorrect = zero, the scores of items were summed-up and the total divided by numbers of items, giving a mean score for the area; these scores were converted into a percentage score, means and standard deviations were computed. Level of knowledge was considered satisfactory if the score 70% or more and unsatisfactory if less than 70%.

II- Patient leg assessment sheet

It is a standardized tool adapted from**; Richelle, Gillian, Martine, and Byron S., (2006).** Used to assess conditions of the lower limb; it will be covers (pain, skin color – temperature and turgor, foot deformities- nails- orthotics and appropriate footwear, sensory, autonomic, motor, circulation and edema).This type of data was collected thorough examination of the patient's legs pre and post program implementation, leg examination done to assess the condition of the leg, to prevent and to detect early complications. Confirmation was done by the researcher.*Scoring system*: It contains (8) headline items, each item contains sub-items scored as each item grade = 1, to become the total score grades (55).**Scoring system**: Its contain (8) headline items, each item contain sub-items scored as each item grade = 1, to become the total score grades (55).

III- Observational checklist for foot care

It was developed by the researcher based on the recent review related literature from; **Reilly (2013),Black&Hawks (2009), andLewis, Heitkemper, Dirksen, O'Brien, & Bucher, (2007).** And consulting expertise in nursing field. To observe patient practice related to foot care as regards (prepare equipments, daily inspection, daily hygiene, care of the toenail and proper footwear). Modifications were done, based on review of the related literature, clinical learning experience of the researcher and expertise selected certain items to suit the aim of the study. *Scoring system*: it contains (5) head items, each item contain sub items to become (30) items, was rated for two levels; done and not done, each item was observed, categorized and scored into either don = 1, not done = 0. Total system scores for all items was (30) grades. Those

who obtained (70%) and more were considered having a satisfactory level of practice while those who obtained less than (70%) were considered having unsatisfactory level.

IV- Patients' compliance assessment questionnaire sheet

It was developed by the researcher after reviewing the recent review related literature; **Reilly (2013), Black & Hawks (2009), and Lewis, Heitkemper, Dirksen, O'Brien, & Bucher, (2007).** It was used to assess patients' compliance regarding (pain management, nutrition, smoking cessation, exercise, lower limb care, pharmacotherapy, risk factor modification and follow up).*Scoring system*: itcontains (8) headline items, each item contain sub items to become (49) sub items, was rated in three levels; always, sometimes and never, each item was categorized and scored into either always = 2, sometimes = 1 and never = 0. Total system scores for all items as regard always item was (98) grades and sometimes item was (49) grades. Those who obtained (70%) and more were considered having a satisfactory level of compliance while those who obtained less than (70%) were considered having unsatisfactory level.

Administrative design:

An official permission was obtained from the directors and chief person of each department of the settings to conduct this study. Patients' consent was obtained for data collection after explaining the purpose of the study.

*Tools validity:*The tools were revised by a panel of experts: five professors of medical, surgical nursing from faculty of nursing and two professors from vascular surgery, faculty of medicine, Ain Shams University who reviewed the content of the tools for comprehensiveness accuracy,

clarity, relevance and accuracy of scoring and recording of the items. Modifications of tools were done according to the panel's judgment.

Tools reliability: Reliability of the test tools was used to determine the extent to which the items in the questionnaire are related to each other. The Cronbach's alpha model was used in the analysis; it is a model of internal consistency, a value throughout the program phases are (0.701, 0.722, 0.715 and 0.739) respectively, which denotes acceptable internal consistency meaning that the questionnaire is reliable (statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1. Higher values of Cronbach's alpha (More than 0.7) denote acceptable reliability.

Ethical consideration: The ethical consideration in this study includes the following:

- The research approval was obtained from the ethical committee of the faculty of nursing – Ain shams University.

- The researcher clarified the objectives and aims of the study, patients included in the study.

- The researcher was assuring maintaining anonymity and confidentiality of patients and they have the right to withdraw from the study at any time.

Pilot study: A pilot study was carried on, 10% (9 patients) from sample size to test the clarity of tools, applicability of the study and time consuming. And no modification according to the results of a pilot study, so the pilot study sample included in the study.

Field work:

The actual field work started at 2/3/2013 and was completed by the end of 6/8/2014. The research period took about 17 months (68 weeks, divided as 30 to 34 weeks for assessment phase, 2 weeks for implementation phase and 1 week for each follow up phase. The total hours of program implementation were (48) hours for all patient groups (6 hours for each patient group, divided as 2.5 hours / 150 minutes for theoretical part and 3.5 hours / 210 minutes for practical part). The researcher used only code numbers to mark sheets to keep the patient confidentiality. ***The educational program was divided into four phases:***

1. Assessment phase (first phase): The patient assessment was done pre program implementation and established through patient interview by asking the patient questions to get information that related to bio-sociodemographic data, medical characteristics data, assessment level of patient's knowledge, assessment of foot conditions through foot examination, observe level of patient practice related to foot care and assess the level of patient compliance regarding therapeutic regimen, assessment phase: have been applied in a period of 30-34weeks, start from 2/3/2013 to 25/9/2013.

2. Planning phase (second phase): According to initial assessment, the content of the program was designed.

3. Implementation phase (third phase): Implementation phase: will be done in a period of 2 weeks, started at 4/1/2014 to 15/1/2014 (from Saturday to Wednesday), the total numbers of patient groups were 8 groups, divided as 4 groups every week, every patient group is 10-11 patients. The program\ includes 6 sessions *(3 sessions for theoretical part and 3 sessions for practical part)*, based on that, the total hours of program implementation were 48 hours divided as 6 hrs for each patient group *(2.5hrs for theoretical part*

and 3.5 hrs for practical part). Total number of a program sessions are six sessions, each one had its own objective, and theoretical instructions were presented, followed by clinical practice. The course time was divided as 2/3 for practical training and 1/3 to theoretical knowledge. The program sessions started at 7.30 am, ended at 1.30 pm, each theoretical session time consumed 50 minutes and each practical session 70 minutes.

4. Evaluation phase (fourth phase): Effect of the educational program on patient was done through comparing the pre and post assessment of the patients as regards: Their knowledge, foot care, and foot compliance. Educational program evaluation done into out three phases: first,

immediately after program implementation phase, second, after three months after program implementation and third phase done after six months of program implementation.

Statistical analysis:

Data analysis was done thorough using percentage, mean, standard deviation, and Freidman test to compare between results pre, immediate post program implementation, after 3 month follow up and after 6 months to evaluate the outcome of the program and patient compliance. Data entry and statistical analysis were done using spss, (with IBMSPSSStatistics Version 20 for Windows).

Result

Table (1): Socio-demographic characteristics of the study sample (n= 84 pts).

Socio-demographic characteristics	No	%
1.Age (years):		
a- 18 < 30 yrs	0	0.0
b-30 < 45 yrs	17	20.2
c->45 yrs	67	79.8
2.Gender:		
a-Male	38	45.2
b-Female	46	54.8
3.Educational level:		
a-Illiterate	34	40.5
b-Basic education	26	31.0
c-Secondary education	19	22.6
d-University education	5	6.0
4.Income:		
a-Enough to treatment	9	10.7
B-Not enough for treatment	75	89.3

As observed from the table(1), this table revealed that; the most age among the studied patients was >45 yrs (79.8%); more than half of them were female. On the same table discovered that, around two fifth of the study sample were illiterate and income not enough to treatment (89.3%).

Table (2): Medical characteristics data of the study sample (n= 84 pts).

Items	No	%
1.Duration of disease occurrence:		
a- < 6 months	4	4.8
b- > 6 months	80	95.2
2.Complications:		
a- Yes	4	4.8
b-No	80	95.2
3-Comorbid diseases:	44	
a-Hypertension		52.4
b-Diabetes	57	67.9
c-Cardiovascular diseases	13	15.5
d-Liver disease	1	1.2

Table (2), revealed that; the most of patient in the present study with duration of disease occurrence more than 6 months and didn't complain from complications

NB: Comorbid diseases numbers more than 84 because the many patients had more than one Comorbid disease
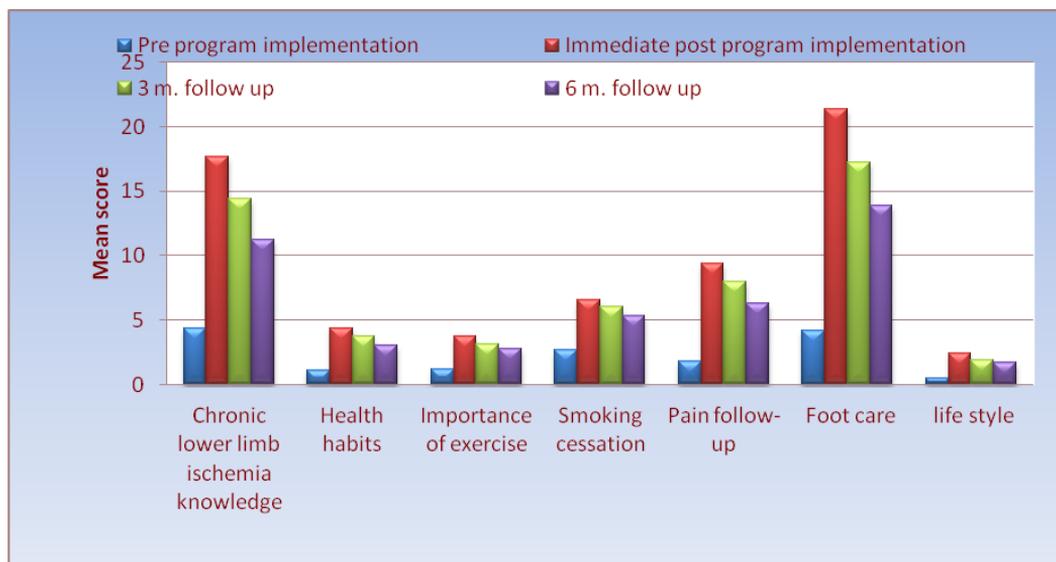

Figure (1): Total mean scores of patient's knowledge pre and post test program implementation

Figure (1): This figure shows that; there were statistically significant differences in the total mean score, which become highly statistically significant immediate post program implementation, while show slightly decreased at 6 month follow up.

Table (3): Total mean scores of the patient's leg assessment pre and post implemented an educational program (n = 84 pts).

Items	Mean ± SD	x^2 value	P-value
- Pre program implementation	14.1 ± 0.7		
- Immediate post program	14.0 ± 0.6	102.5	<0.001*
- 3 month follow up	13.6 ± 0.5		
- 6 month follow up	13.6 ± 0.5		

: Significant at P ≤ 0.05, Different superscripts in the same row are statistically significantly different
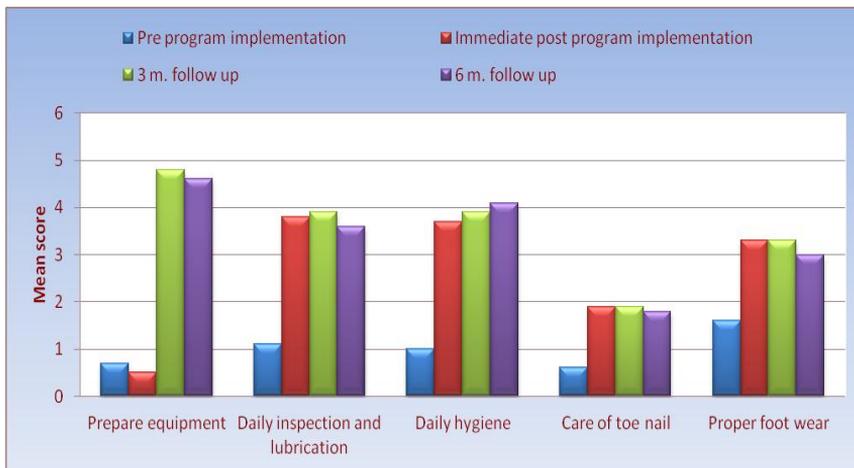

Figure (2):Total mean scores of patient's foot care assessment pre and post implemented an educational program (n = 84 pts).

Table (3), shows that; there was a statistically significant decrease slightly in total mean score in 3 and 6 month follow up than pre and immediate post program implementation 102.5 at P- <0.001*

Figure (2), shows it, there was statistically significant difference between total mean score from pre-program implementation to post test program implemented educational program.

Table (4):Total mean scores of patients pre and post implemented an educational program regarding to their compliance (n= 84 pts).

Items	Patient compliance				x^2-value	P-value
	Pre program implementation	Immediate post program implementation	3 mon. Follow up	6 mon. Follow up		
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD		
1-Pain Management	2.0 ± 1.8	7.2 ± 1.3	7.3 ± 1.9	6.7 ± 1.6	208.0	<0.001*
2-Nutrition (Dietary Management and Weight Reduction)	1.7 ± 0.5	3.3 ± 1.1	3.9 ± 0.7	3.4 ± 0.7	186.1	<0.001*
3-Smoking Cessation	4.3 ± 0.5	8.9 ± 1.8	8.7 ± 0.5	8.7 ± 0.5	54.8	<0.001*
4-Exercise	1.0 ± 0.6	5.5 ± 1.3	5.2 ± 1.3	4.0 ± 1.3	229.2	<0.001*
5-Lower Limb Care	4.1 ± 1.1	6.3 ± 0.8	5.9 ± 2.3	5.1 ± 0.7	121.8	<0.001*
6-Pharmacotherapy	2.9 ± 1.3	4.0 ± 0.0	4.0 ± 0.0	3.8 ± 0.4	103.7	<0.001*
7-Risk Factor Modification	1.4 ± 1.7	2.1 ± 1.8	2.1 ± 1.8	1.8 ± 1.7	48.0	<0.001*
8-Follow Up	3.1 ± 0.7	4.4 ± 1.1	4.2 ± 0.7	3.8 ± 0.4	156.9	<0.001*

*: Significant at P ≤ 0.05, Different superscripts in the same row are statistically significantly differ ENT

Table (4), show that, there was a statistically significant difference between total mean score from pre-program implementation to post test program implemented an educational program as regards patient compliance at P-value<0.001*; there was a statistically significant increase in mean score<0.001*.

Discussion

Chronic lower limb ischemia is a significant economic problem which can cause limb loss. Thus, after 5 to 10 years, more than 70% of patients report either no change or improvement in their symptoms, while 20% to 30% have progressive symptoms and require intervention, and less than 10% need amputation. Despite the relatively benign prognosis for the affected limb, however, symptoms of intermittent claudication should be viewed as a sign of systemic atherosclerosis.

Approximately 10% of patients with intermittent claudication are estimated to deteriorate to critical limb ischemia within 5 years, and 20% to 30% of patients with critical limb ischemia require a major amputation. Amputation is generally reserved for those who do not respond to medical management**Morris-Stiff,& Lewis, (2010) and Slovut,& Sullivan, (2008).**

The present study showed that the majority of patients, their age category was more than 45 years, which is similar to,**Jensen, Vatten,& Myhr, (2005),** they are confirmed that the, chronic limb ischemia increases with age approximately 0.91, 95%. Almost several researches were supportedthese results, this may due to the chronic lower limb ischemia is commonly affected older age due to vascular problem and the major cause of chronic lower limb ischemia is atherosclerosis, which is strongly affected older age.

Regarding gender the present study showed that more half of patients included in the study were female. In opposites, **Mohamed, (2014),**who stating that, the prevalence of chronic limb ischemia

increases in male than female**.** So we cannotgeneralizethis result on all populations, this may due to the most of patient follow to vascular clinic at this time were female. Also **Norgren, Hiatt, Dormandy, Nehler,& Harris,et al, (2007),** reported that, the prevalence of chronic lower limb ischemia, symptomatic or asymptomatic, is slightly greater in men than women, particularly in the younger age groups. In patients with chronic ischemia, the ratio of men to women is between 1:1 and 2:1.

The present study finding showed that the highest percentage of disease duration was more than 6 months, this may be due to the occurrence of chronic lower limb ischemia in most patients asymptomatic due to gradual arterial narrowing for a long period of time, the arterial narrowing or obstruction that occurs as a result of the atherosclerotic process which reduces blood flow to the lower limb and produce symptoms. This result was supported by **Baser, Verpillat, Gabriel, & Li Wang, (2013) and Tendera, Aboyans, Bartelink, Baumgartner,&Clément, (2011).**They reported that, the chronic limb ischemia associated with atherosclerosis so the manifestation gradually appears in onset.

As detected from these study results, about half of patients were hypertensive, this may due to the direct vascular relation between hypertension and chronic limb ischemia and the major cause of lower limb ischemia the same major cause of hypertension (atherosclerosis). This result was in accordance with**, Diehm, Silvestro, & Schmidli, (2006).** They are stating that elevated blood pressure is correlated with an increase in the risk of developing Peripheral arterial diseases, as well as in associated coronary and cerebrovascular events (heart attack and stroke). Hypertension, increased the risk of intermittent claudication 2.5- to 4-fold in men and women, respectively.

At the same point, **Joosten, Pai, Bertoia, Rimm, Spiegelman, et al, (2012),** stressed that**,** the risk factors are the same as those for atherosclerosis: increasing age, hypertension, diabetes, dyslipidemia (high, low-density lipoprotein [LDL] cholesterol, low high-density lipoprotein [HDL] cholesterol), cigarette smoking (including passive smoking) or other forms of tobacco use, and a family history of atherosclerosis. Obesity, male sex, and a high homocysteine level are also risk factors.

Regarding to diabetes, this study showed that, more than two third of patients were diabetics, the results may be due to the effect of diabetes on macro and a micro vascular system based upon chronic lower limb ischemia. This result was supported by **Elizabeth, Keattiyoat, Michael, Josef&Richey (2006),** They are stating that Chronic lower limb ischemia is more than twice as common among diabetic compared with non-diabetic individuals and is a strong predictor of subsequent cardiovascular morbidity and mortality. Chronic hyperglycemia may contribute to the development of atherosclerosis and subsequent macrovascular events, including chronic lower limb ischemia.

In the similar point, **Mei-Fang**, **Ying**, **Cui-Chun**, **Rong**,**Lian-Xi**,&**Fang**, **(2013),** stated that, diabetes the prevalence and risk of lower limb lesions were remarkably higher than those of the persons without diabetes. Also the incidence is higher for people with diabetes and people with coronary artery disease, it was reported by **Onur, Patrice, Sylvie,& Li Wang,(2013) and Michal, et al, (2011).**Moreover, chronic lower limb ischemia in patients with diabetes is more aggressive compared to non-diabetics, with early large vessel involvement coupled with distal symmetrical neuropathy. The need for a major amputation is five- to ten-times

higher in diabetics than non-diabetics, this result was reported by, **Norgren, Hiatt, Dormandy, Nehler, &Harris, et al, (2007)**.

Based on the result of this study, regarding cardiovascular diseases, about 15.5% were cardiac problem. Because chronic lower limb ischemia mostly caused by atherosclerosis, atherosclerosis is a systemic disease, patients with manifest atherosclerosis in 1 vascular territory may have atheromatous plaques, although asymptomatic, in other arterial territories, therefore many patients withcardiovascular disease who had chronic lower limb ischemia. This result was supported by, **Gregorio, Giuseppe, Linda,&William,(2010),** they are reported that an increased inflammatory status is associated with the development and subsequent worsening of atherosclerosis in the arteries of the lower limbs and is involved in the extent and severity of vascular disease in other arterial territories.

The present study showed that, regarding the total patients' knowledge show highly statistically significant improvement in patient's knowledge post tests implemented a program than pre program. This may be due to the low levels of education and high levels of unemployment among patients, this has made the patients unaware regarding their health, and the most of patients come to the clinic to get medication only. Also, this can as well be due to the lack of health care professionals to opportunistically educate the patients about their condition. So the program implementation produces high statistical improvement in patients knowledge. This finding in accordance with **Robert, (2011)**, he stated that, lack of patient education effect on patient's knowledge.

According to the results of this study, there was no statistically significant difference of the right and left leg as regards to pain assessment, this may due to daily work duties, in appropriate pain relieving measures, impaired perfusion to lower limb causing intermittent claudication and progression of the disease process. This result supported by **Danuta, Katarzyna, Mirosława & Marzena, (2012),**they are stating that the respondents to pain management they lose control of their lives. More than half of respondents cannot control their pain and this is why they are taking pain killers.

As regards to daily inspection, the present study show that, a statistically significant improvement in patient foot care practice related to daily inspection throughout the post implemented program phases. This result may due to the patient awareness toward their condition was increased, educating and practicing the importance of daily inspection to overcome unwanted complications. **Robert, (2011),** reported that, more than 50% of patient had not their feet examined by himself and by their physician, and 71.6% of patients respond to education about foot examined by him

Focusing on patient compliance regarding to pain management, the present study showed that,there was a statistically significant improvement of patient compliance, while slightly decreased at 6 month follow up. This may due to physical and psychological tension from pain which make the patient more compliant to pain relieving measures. In opposite **Phyllis,& Louise (2013)**, reported that a considerable unmet need for pain relief and management. In part, this may be due to the patient's not adhering to treatment recommendations and pain relieving measures.

Conclusion

The educational program affected positively on compliance for patient with lower limb ischemia, which showed

through there were statistically significant differences in patients' knowledge, practice and compliance scores between pre, post, 3 months and 6 months later of program implementation. This indicates justification of the study hypothesis.

Recommendations

Based upon the results of the current study, the following recommendations are suggested:

- Continuity ofpatient educationmustbe, over time, the patient education is a fundamental part of their treatment .OR the educational program should become an integral part of the total management of Patient with Lower Limb Ischemia

- Patient compliance must be checked over time, this increase patient compliance regarding his / here conditions.

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