

# Pain and Related Coping Strategies among Patients with Peripheral Arterial Occlusive Disease

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**Abstract:** *Peripheral arterial occlusive disease (PAOD) affects majority of the population thereby resulting in Intermittent Claudication (IC). Objective: This study was aimed to assess the level of pain and related coping strategies among patients with PAOD in selected general surgical wards and OPD of CMC, Vellore. Methodology: A descriptive design was used. A total of 75 subjects were selected using convenience sampling method. Data was collected by self-administered questionnaire using the Numerical Rating Scale (NRS) for pain and Pain Coping Inventory (PCI) tool. Results: Findings showed that majority of the subjects had moderate (37.33%) to severe pain (50.67%). It also revealed that majority of the subjects adopted passive coping strategy (98.7%). From the study findings it was clear that there is a significant relationship between level of pain and associated risk factor of family history ( $p= 0.013$ ) and also with regard to the intake of pain medications ( $p= 0.007$ ). A significant correlation was also observed between the passive coping and intake of pain medications ( $p= 0.019$ ).*

**Keywords:** Level of pain, Coping strategies and Peripheral Arterial Occlusive Disease (PAOD)

## 1. Introduction

Peripheral arterial disease refers to any disease or disorder of the circulatory system outside of the brain and heart. It is called a “silent killer” disease. Peripheral Arterial Occlusive Disease (PAOD) is narrowing or blockage of arteries which results in reduced blood flow, most commonly occurring in the legs and sometimes in arms. (Bibi, 2012).

PAOD is part of a global vascular problem of diffuse atherosclerosis. Lower extremity peripheral arterial disease is the third leading cause of atherosclerosis cardiovascular morbidity following coronary artery disease and stroke (Fowkes et al., 2013). The disease affects 12-14% of the general population and its prevalence increases with age affecting upto 20% of patients over the age of 75 years (Shammas, 2007). The National Institute of Health and Clinical Excellence (2012) identifies that the most common symptom of PAOD is leg pain while walking which is known as Intermittent Claudication (IC). This disease usually leads to intermittent claudication, myocardial infarction, dementia and stroke. (Issa et al 2010)

The disease affects 12-14% of the general population and its prevalence increases with age affecting upto 20% of patients over the age of 75 years (Shammas, 2007). It affects 8 –12 million Americans. As the population ages, the prevalence could reach 9–16 million in those aged 65 and older and 19 million overall by 2050 (Mahameed, 2009).

According to the First Robust Global Estimates, it is found that the number of people with PAOD worldwide has risen

dramatically by 23.5% in just 10 years from about 164 million in 2000 to 202 million in 2010 (Kaiser, 2013). According to “Save India – A Vascular Screening Programme” (2010), it is estimated that one in every 20 Indians over the age of 50 has PAOD and it is estimated to affect more than 9 million people in India. Individuals with PAOD suffer a five-fold increased relative risk of a cardiovascular ischemic event and total mortality that is two to three fold greater than those without PAOD.

According to National Heart, Lung and Blood Institute, USA (2006), it is said that 10% of people who have PAOD have claudication. In US the health care costs for PAOD was \$403 billion in 2006 when compared with \$190 billion for cancer. PAOD is a strong predictor of adverse cardiovascular outcome (Sigvant, 2009).

## 2. Literature

The literature review has been organized under the following sub-topics:

- PAOD in general population
- Pain in PAOD
- Coping strategies in patients experiencing pain

### Peripheral Arterial Occlusive Disease

PAOD comprises of the entities which result in obstruction to blood flow in the arteries, exclusive of the coronary and intracranial vessels.

The symptoms of peripheral arterial disease is silent in its early stages but walking even short distance becomes painful for the patients as it worsens, known as claudication. This pain is relieved after rest, but resurfaces again when walking. The pain cycle which makes a person stop now and again during walking is the first warning sign of the disease; this sign is often mistaken for signs of aging and ignored. As the disease progresses leg and foot becomes cold, blue/red discoloration of foot or toes, numbness, tingling or pain in the leg, paleness of leg, wound ulcers that do not heal, dry, fragile, shiny looking skin are noticed. Manifestations of this disease has a great impact on life style. Peripheral arterial disease is a common disease in adults and its complications take a great toll in terms of quality of life.

Prevalence of any type of PAOD among individuals aged 40-59 years is 3%, 60-69 years is 8% and above 70 years is 19% in the US population. In Europe, the age group of 70-74yrs is 16%, 80-84yrs is 26% and above 85 is 33% (Sigvant, 2009).

Old age is known as one of the most significant risk factors. Prevalence of PAOD is 3-12% worldwide. It is said that 27 million individuals are affected per year in Europe. In a study done in Europe among 6979 subjects, 13% had PAOD and 16% evidence of PAOD and Coronary Artery Disease. Most patients were unaware of their disease. Fewer than 50% of PAOD patients and about 30% of their physicians were aware that PAOD was present (Harris et al., 2012).

The disease affects both men and women equally. Patients with PAOD even in the absence of a history of myocardial infarction or ischemic stroke have approximately the same relative risk of death from cardiovascular causes (Hiatt, 2001). PAOD is reported to have prevalence of 29% in high risk individuals age older than 70yrs without additional risk factors or age 50-69 with a history of cigarette smoking or diabetes in the primary care setting (Mahameed, 2009).

Clearstate Private Limited of Singapore (2011) estimated that 10 million people are diagnosed with PAOD. Another 76% in Taiwan and 98% in India remain undiagnosed due to lack of awareness. India's annual incidence is 65 lakh whereas China, Korea and Taiwan are 30,00,000;1,88750 and 1,80000 respectively.

Within the low or middle income countries the number of people with PAOD has gone up by 28.7% while high income countries have seen an increase of 13.1% (Whiteman, 2013). Chennai Urban Population Study (2000) done among a selected population of 1262 in Tirumangalam and T-Nagar shows a prevalence of 631 people with PAOD (Premalatha et al., 2000).

As the world's population ages, PAOD will become substantially more common and there is an urgent need to assess, treat and implement prevention strategies in both the low, middle and high income countries (Fowkes, 2013).

### **Pain in PAOD**

Pain is identified as the fifth vital signs by Australian and New Zealand College of Anesthetics and The Chronic Pain Coalition in an attempt to facilitate accountability for pain assessment and management (Chronic pain Policy Coalition 2007; ANZCA 2005). It is unacceptable for patients to experience unmanaged pain or for nurses to have inadequate knowledge about pain and a poor understanding of their professional accountability in this aspect of care (Wood, 2008).

Pain sensitivity may differ in adults of advanced age (Helme et al., 2001). The incidence of pain more than doubles once the individuals surpass the age of 60 with pain frequency increasing in each decade (Bell, Halvey&Paice, 2004).

Patients' perception of pain is an important factor to be considered while managing pain. Therefore, pain measurement in patients continue to depend on methods that can utilize or control the subjective experience of pain. It is difficult to describe a subjective and personal experience. A variety of terms may be more meaningful than "pain" for the individuals. Weakness, fatigue, hurt, ache and soreness are some of the terms that older adults use to express their pain (Miaskowski, 2000).

Patients who live with pain are unable to participate in routine activities of daily living (ADL). Pain control and relief measures are effective in lowering pain levels and help patients to function more normally and comfortably. Chronic pain can provoke emotional reactions, such as fear or even terror, depending on what we believe about the pain signals. Chronic pain may be perceived by the individual as merely a nuisance, a feeling to be overcome in order to continue in the activity.

Although pain is considered to be largely a sensory experience, there appears to be a strong correlation with psychological factors such as depression, helplessness and coping strategies (Covic, Adamson&Hough, 2000).

Pain in PAOD is termed as Intermittent Claudication (IC). It is the most frequently presenting symptom. IC is used as the marker of PAOD. The frequency of IC increases dramatically with advancing age (Ouriel, 2001). The first clinical sign of PAOD is usually IC which affects 2-3% of males and 1-2% of females older than 60 years (Goessens& Graff, 2007). IC is defined as pain in the muscles of the leg with ambulation which is relieved by rest and is caused by inadequate blood supply.

According to American Heart Association (AHA) Guidelines 2005, it is estimated that the following rates of limb and cardiovascular outcomes at 5 years in patients with intermittent claudication is as follows, stable claudication is 70-80%, worsening claudication 10-20% and chronic limb ischemia 1-2%. About one third to one fifth of the patients with PAOD exhibit typical symptoms of IC (Hankey, Norman &Eikelboom, 2006).

Patients with IC have a relative increase in the incidence of tumour and death. In addition to high morbidity and mortality, patients with IC have a poor quality of life and high rates of depression. The adverse impact of IC on the patient's physical and emotional well-being appears to be directly related to walking ability (American Heart Association, 2005).

The Framingham study 2002 indicates that the incidence of IC in men rose from 0.4 per 1000 aged 35-45 years to 6 per 1000 aged 65 and older. Incidence in females is half of that in men. About half of all the people with PAOD have obvious symptoms, 11-33% report classic intermittent claudication and up to one third fail to communicate their symptoms to the health care provider (Mahameed, 2009).

Research studies in 34 community based studies worldwide (22 of high income countries & 12 low and middle income countries) have identified that around 70% of people with PAOD experience IC with majority living in Southeast Asian and Western Pacific regions (Whiteman, 2013).

In the Indian scenario it has been identified that among 1244 patients with IC the cumulative 10 years risk of ischemic ulcer and rest pain was found to be 23% and 30% respectively. It is also identified that 25% of the PAOD population experience IC and after 5 years 50% have stable symptoms; 16% have worsening of symptoms, 16% require surgery and 4% need amputation (Khanna, 2005).

Patients with IC have a higher mortality rate of about 12% a year than age matched controls. Of these 66% are due to heart disease and 10% due to strokes (Cassar, 2006). It is reported that 40% of patients with IC die or suffer from stroke within 5 years of presentation (Meru & Mitra, 2006). The therapeutic intervention of IC essentially aims at providing symptomatic relief and reducing the systemic cardiovascular events.

### **Coping strategies in patients experiencing pain**

Coping and beliefs are cornerstones to our understanding of adjustment to chronic pain (Tan et al., 2011). Lazarus and Folkman (1984) defined coping as a process of evaluating a stressful situation consisting of primary and secondary appraisal and responding to a stressor.

Taylor (1998) describes two general coping strategies, i.e. problem-solving strategies and emotion focused coping strategies. Problem solving coping strategies are efforts to do something active to alleviate stressful circumstances, whereas emotion-focused coping strategies involve efforts to regulate the emotional consequences of stressful or potentially stressful events. Soothing thoughts like "I am going to be okay" or "I will find a solution" or soothing activities, such as listening to calming music, meditating, crying, or talking to an emotionally supportive friend are commonly noted. Not all emotion focused coping is useful, such as drinking or using other substances to dampen emotions or "taking out your

anger" on others. Women tend to use emotion focused coping more often than men.

Problem focused coping is a more direct attempt to modify the pain experience like finding a new doctor, creating a pacing plan, trying a new treatment for chronic pain, or actively working to change catastrophic or other disruptive thinking. Men tend to prefer problem focused coping over emotion focused. This preference may cause difficulties if men neglect the emotional aspects of chronic pain. Emotional distress can make pain worse, and may undermine a man's problem focused efforts.

Norman Endler and James Parker, proposed a third type called avoidance coping. This type of coping involves actions or mental strategies targeted at avoiding a stressful situation (Ruehlman, 2005). In the context of chronic pain management, distraction is one of the major forms of avoidance coping, including watching a movie, reading, having sex, getting engrossed in a hobby or social activity. Interestingly, catastrophic thinking interferes with the effectiveness of distraction – another reason to evaluate whether one sometimes think in catastrophic ways. Sometimes avoidance is not helpful (Meru & Mitra, 2006).

High avoidant participants were less tolerant of pain and more likely to report using dysfunctional coping strategies, but did not differ from their low avoidant counterparts in their sensitivity to pain nor ratings of its intensity (Zettle, 2005).

The effect of a cognitive behavioural approach changes the coping skills of patients who experience chronic pain. They are psycho education, experiential practices and guided imagery. These strategies should modify the patients coping skills for pain and hence reduce the pain level of these patients (Lau et al., 2002).

There are different ways to cope with pain, and there are different ways to regulate emotions associated with chronic diseases. Because most patients with chronic diseases are unable to 'solve' their persisting pain conditions by themselves and to find distance to negative emotions associated with pain, they have to find strategies to adapt to a long-lasting course of disease. Patients have to find ways to maintain physical, emotional and spiritual health despite of often long-lasting courses. Thus, patients' coping with chronic pain is an ongoing process which includes appraisals of stress, cognitive, behavioral and emotional coping responses, and subsequent reappraisals of stress. One of the most frequently used concept on adaptation strategies of patients with chronic pain diseases, differentiates active and passive coping. Active coping (i.e., problem solving, including collecting information and refocusing on the problem, or regulation of emotion by focusing attention on the emotional response aroused by the stressor) is associated with less pain, less depression, less functional impairment, and higher general self-efficacy, while passive coping (i.e., avoidance and escape) is correlated with reports of greater depression, greater pain and flare-up activity, greater functional

impairment, and lower general self-efficacy. Although the importance of decreasing maladaptive and encouraging adaptive coping responses is emphasized by innovative treatment programs for chronic pain, one has to ask which adaptive coping strategies were of relevance for the patients (Bussing et al., 2010).

Active coping strategies are either behavioral or psychological responses designed to change the nature of the stressor itself or how one thinks about it, whereas avoidant coping strategies lead people into activities (such as alcohol use) or mental states (such as withdrawal) that keep them from directly addressing stressful events. Active coping strategies, whether behavioral or emotional, are thought to be better ways to deal with stressful events, and avoidant coping strategies appear to be a psychological risk factor or marker for adverse responses to stressful life events (Moos & Holahan, 1987).

While certain pain coping strategies appear to be adaptive (e.g., coping self-statements), other coping strategies appear to be maladaptive (e.g. catastrophizing, diverting attention, increasing behavioral activities). Patient's who rated their ability to decrease pain as relatively high, reported lower levels of depression and pain (Keefe & Williams, 1990).

It is said that Type D personality affects the health outcome of these patients. Type D personality refers to the tendency to experience negative emotions and to inhibit self expression in social interaction (Aquarius & Smolderen, 2009).

The use of particular coping strategies is based on judgments of pain as a threat as well as perceived ability to cope with pain, suggesting that certain types of coping are related to pain ratings. Indeed, greater pain control beliefs and ignoring pain are inversely related with poorer pain outcomes, including pain, distress, and disability, whereas prayer and hoping and diverting attention are positively correlated with these poorer outcomes. Pain coping can affect long-term functional disability and pain, and changes in coping are related to improvements in psychological and physical functioning.

African-Americans use prayer and hope more than Caucasians to cope with pain. African-American pain patients also report lower perceived control over pain, more external pain-coping strategies, and a stronger belief that others should be solicitous when they experience pain. African-Americans were more likely to divert attention away from pain whereas Caucasians were more likely to ignore the pain and use coping self-statements. In contrast, reinterpreting pain sensations was positively correlated with pain severity in African-American participants whereas this coping strategy was negatively correlated with pain severity in Caucasian participants (Cano, Mayo & Ventimiglia, 2007).

Garnefski et al., (2009) showed that coping in PAOD patients with IC the mean value ranged in different aspects such as

cognitive coping 8.1, positive refocusing 5.9, depressive symptoms 4.7 and goal related coping was 24.

A study done in Netherland regarding coping of PAOD patients showed that a ruminative and catastrophizing way of coping response to the disabilities was related to more depressive symptoms. It suggests improvements in cognitive and goal related coping strategies which might reduce the level of risk of depressive symptomatology. A specific intervention program that brings about effective changes in coping strategies also needs to be implemented (Garnefski, Grol, Kraaij & Hamming, 2009).

In conclusion it is evident from the literature reviewed for the present study that there is a relationship between the level of pain and coping strategies among the peripheral arterial occlusive disease patients.

### Problem Definition

A descriptive correlational study to assess the level of pain and related coping strategies among patients with peripheral arterial occlusive disease in Christian Medical College, Vellore.

### Objectives

- 1) To assess level of pain among patients with PAOD.
- 2) To identify coping strategies in relation to pain among patients with PAOD.
- 3) To correlate level of pain and related coping strategies among patients with PAOD.
- 4) To associate pain with the socio-demographic and clinical variables of patients with PAOD.

## 3. Methodology

### Research Design

A Descriptive correlational research design is adopted for this study to assess the level of pain and coping strategies among patients with peripheral arterial occlusive disease.

### Setting of the Study

This study was undertaken in Vascular Surgical Outpatient Department and General Surgical wards of Christian Medical College and Hospital, Vellore. Around 120-150 patients visit the Vascular OPD in a day. Out of this 25-30 patients are with PAOD. The general surgical wards consist of 138 inpatient beds with 14 beds designated for vascular patients. About 50 PAOD patients get admitted in one month. Vascular Surgery is a specialized service which is rendered to the general population.

### Population

This study included all adult patients who were diagnosed with PAOD, attending Vascular Surgery Outpatient Department and those admitted in the General Surgical wards of Christian Medical College, Vellore.

### Sample

Subjects were all patients diagnosed to have PAOD, attending Vascular Surgery OPD, who are admitted in General Surgical

wards during the study period and those meeting inclusion criteria.

### Sampling Technique

Consecutive sampling technique was used. All patients with peripheral arterial occlusive disease who fulfilled the inclusion criteria were recruited for the study.

### Sample Size

Sample size was calculated using the software *nMaster 2.0 version* with the expected prevalence of moderate and severe pain of 75% with precision of 10% and alpha level of 5% , the minimum required sample for the current study is  $n = 75$  (Garnefski et al., 2009).

### Criteria for sample collection

Subjects who fulfilled the following inclusion criteria were selected to participate in the study.

### Inclusion criteria

Male and female patients who:

- Are above 18 years of age.
- Can read and write Tamil, English and Hindi.
- Are diagnosed to have PAOD for more than 3months.
- Are willing to participate in the study.

### Exclusion criteria

Patients:

- With malignancy or major complications like stroke, previous amputation.
- With cognitive impairment.
- Who die or are discharged against medical advice during the data collection period.

### Data Collection Method

The data collection was done for six weeks in the surgical Outpatient department and general Surgical wards of C.M.C Vellore. Hospital numbers of patients registered for the next OPD day was collected from the computerized list the previous evening with the help of Medical Records Officer (MRO). The subject's name and hospital number was listed down by the investigator and handed over to the MRO at 7 am on the OPD day. She was also present in the OPD on the specific day and met the subjects as they arrived, before they met the surgeon. The investigator introduced herself, explained about the purpose of the study and obtained an Informed Consent from the subjects who fulfilled the inclusion criteria. The Numerical Rating Scale and Coping Strategies questionnaire was administered by the investigator in the languages according to the patient's convenience, at a quiet venue on the same floor. The investigator stayed in the OPD till she completed interviewing the subjects for the day (Tuesday & Friday). Each patient took an average of 20- 30

minutes to complete both questionnaires. On other days she went to general Surgical wards and took a list of patients admitted with the diagnosis of PAOD from the Daily Audit Record. She then identified the subjects who met the inclusion criteria, introduced herself to them, developed rapport, got consent and administered the NRS and PCI questionnaire accordingly.

### Data Collection Instrument

The instruments were used for the study are as follows

- 1) Socio-demographic and clinical profile
- 2) Numerical Pain Rating Scale (NRS)
- 3) Pain Coping Inventory (PCI)

### Description of the Instrument

- 1) Socio-demographic profile and clinical profile:
  - a) Socio-demographic profile: Patient information in relation to age, gender, marital status, educational status, occupational status, income, type of family and location of residence (Appendix D).
  - b) Clinical profile: Clinical profile refers to diagnosis, duration of illness, duration on treatment, co-morbid illness, associated risk factors, pain medications and previous surgical history (Appendix E).
- 2) Numerical Pain Rating Scale (NRS):
 

Pain: Clinical manual for nursing practice describes the intensity of the pain ranging as mild, moderate and severe on a scale of 0 - 10 (McCaffery et al., 1989) [Appendix F].
- 3) Pain Coping Inventory (PCI):
 

Developed by Floris W. Kraaimaat and Andrea. W. M. Evers (1996). The questionnaire consists of 33 items graded on a four point Likert scale. It has a higher order factor analysis which is grouped into active and passive coping dimensions (Appendix G).

  - Active coping dimensions are pain transformation, distraction, reducing demands (Adaptive coping).
  - Passive coping dimensions are retreating, worrying (catastrophizing), resting (Maladaptive coping).

## 4. Results

The collected data was entered in the statistical software SPSS 17.0 and were analyzed. . The measured variables are reported using descriptive statistics and frequency tables. Chi square test was used for association analysis of level of pain with selected demographic and clinical variables and ANOVA for comparing coping strategies within selected socio-demographic variables. p value <0.05 was considered statistically significant. The analysis of data has been reported in the forms of tables and charts.

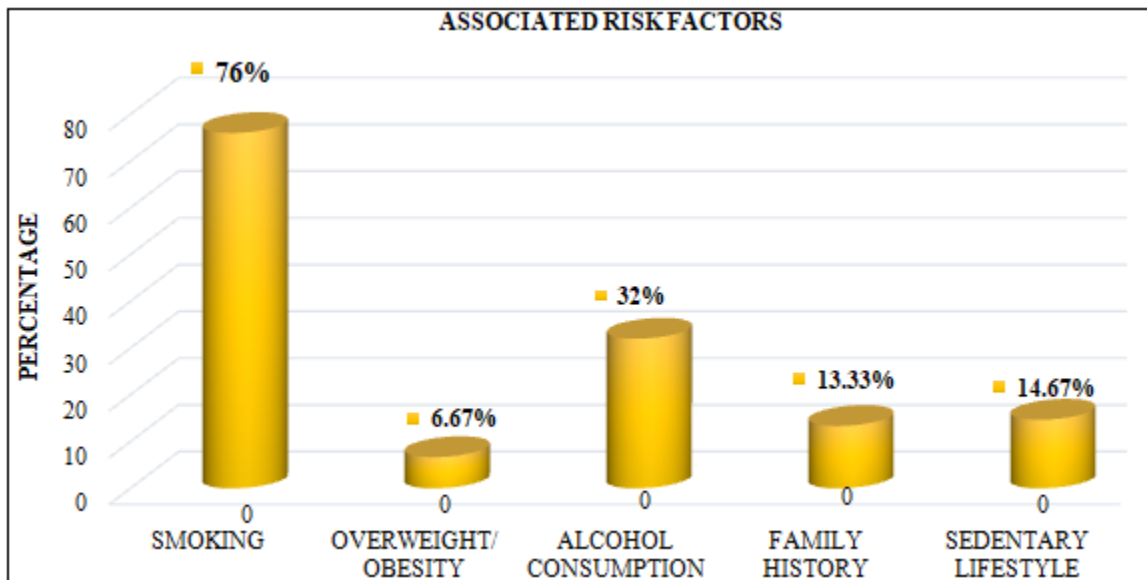


Figure 1: Distribution of subjects according to associated risk factors among PAOD patients

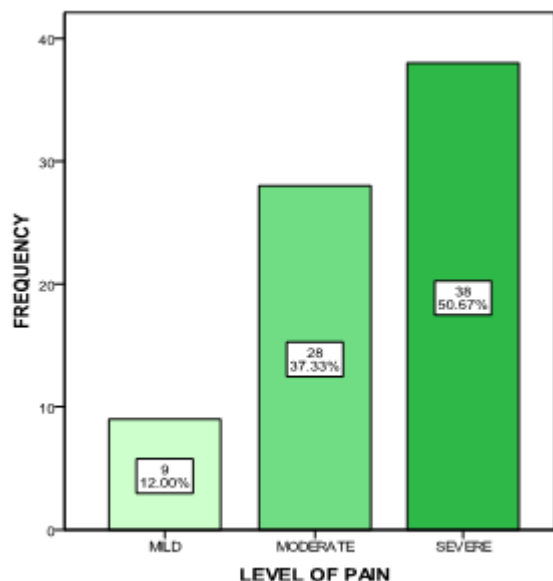


Figure 2: Description of Level of pain among PAOD patients

Findings showed that majority of the subjects had moderate (37.33%) to severe pain (50.67%).

Table 1: Distribution of coping strategy among PAOD patients n = 75

Coping	Maximum score	Mean	Standard Deviation
<b>1.Active Coping</b>	<b>48</b>	<b>26.12</b>	<b>4.72</b>
1.1 Pain Transformation	16	8.29	2.23
1.2 Distraction	20	10.35	2.64
1.3 Reducing Demands	12	7.48	3.03
<b>2.Passive coping</b>	<b>80</b>	<b>53.16</b>	<b>7.91</b>
2.1 Retreating	28	15.19	3.40
2.2 Worrying	32	22.04	5.95
2.3 Resting	20	15.93	2.16

The study findings reveal that revealed that majority of the subjects adopted passive coping strategy (98.7%).

Table 2: Correlation between the level of pain and coping strategies among PAOD patients, n = 75

Label	Pearson's Correlation(r)	p value
Active coping and level of pain	-0.27	0.019**
Passive coping and level of pain	0.51	0.000**

\*\*p < 0.05

The findings also showed that there is a significant association between the level of pain and coping especially in the sub domain of distraction, reducing demands and worrying (p<0.05).

From the study findings it was clear that there is a significant relationship between level of pain and associated risk factor of family history (p= 0.013) and also with regard to the intake of pain medications (p= 0.007). A significant correlation was also observed between the passive coping and intake of pain medications (p= 0.019).

## 5. Discussion

*The first objective was to assess the Level of pain among PAOD patients*

The Numerical Pain Rating scale has been graded in a 10 point scale with scores of no pain as zero, mild pain as 1-3, moderate pain 4-6 and severe pain as 7-10. In this study it was identified that there was nil population without pain. Of the population 12% had mild pain, 37.33% of them experienced moderate pain and 50.67% of the subjects experienced severe pain during the course of illness. This findings were supported by a study published by Akram et al., (2011) reported that 84% of PAOD patients had pain on walking and 64% of them had numbness in both their limbs.

According to The University of Maryland Medical Centre research publications 2010 it was found that leg pain occurred in one leg in 40% of PAOD patients and in both legs among 60% of the patients.

On par with the findings of present study it was found that a study done by Dureja et al., (2013), among 5004 respondents from eight cities across India via telephonic conversation, revealed that the overall point prevalence of chronic pain was 13%, and the mean intensity of pain on NRS scale was 6.93. Respondents with chronic moderate and chronic severe pain were 37% and 63%, respectively. Pain in knees (32%), legs (28%), and joints (22%) was most prevalent. Respondents with chronic pain were no longer able to exercise, sleep, maintain relationships with friends and family, and maintain an independent lifestyle. About 32% of patients lost  $\geq 4$  hours of work in the past 3 months.

#### ***The second objective was to identify the method of coping strategy among PAOD patients***

The current study shows that the Mean  $\pm$  SD of active coping is  $26.12 \pm 4.719$  and passive coping is  $53.16 \pm 7.912$  which reveals that majority of subjects have used passive coping than active coping strategy. In contrast to the study results, Bussing et al., (2010), from his study has quoted that most patients with chronic diseases use adaptive coping strategies which can be differentiated according to the utilization of external resources of health control and internal sources. He has also detailed that the subjective meaning of illness is influenced by intrapersonal, disease-related and environmental factors. These interpretations of illness may have an influence on preferences in decision-making and choice of coping strategies. Most patients regarded their disease as an adverse interruption (loss) of life. Guilt-associated negative interpretations (i.e., punishment, weakness) were rejected in most cases, while positive associated with greater presence of PAOD. This is on par with the study done by Wassel et al., (2011) which projected that the family history of PAOD was associated with a 1.83-fold higher odds of PAOD, an association that was stronger for interpretations of disease (i.e., challenge, value) were of some relevance.

#### ***The third objective was to determine the relationship between level of pain and related coping strategies among PAOD patients***

On correlating the raw scores of level of pain with the mean scores of active and passive coping strategy of PAOD patients, the findings revealed that level of pain with active coping ( $r = -0.27$ ,  $p < 0.019$ ) and passive coping ( $r = 0.51$ ,  $p < 0.000$ ) had significant positive correlation. As the level of pain increases the adoption of active coping strategies decreases while the adoption of passive coping strategies increases significantly. The study findings were supported by Smith, Lumley & Longo, (2002), who stated that using passive coping strategies was associated with more pain. Study by Covic, Adamson & Hough, (2000), stated that multiple regression analyses had shown the optimal predictors of pain in Rheumatoid Arthritis were physical

disability and passive coping, which accounted for 40% of the variance associated with pain. It also has shown that passive coping mediates between the physical disability and pain, and between physical disability and depression. Valente, Ribeiro & Jessen, (2009) have supported the significant relationship between pain and coping strategies in their study that although some adaptive coping strategies (e.g., relaxation and exercise) may be useful for some individuals, it indicates a stronger (negative) association between coping strategies considered maladaptive

#### ***The fourth objective was to find the association between level of pain and coping strategies with the selected demographic and clinical variables among PAOD patients***

On analyzing it was found that there was significant relationship between the level of pain and coping strategies and demographic variables such as age, gender, marital status, educational status, occupational status, income, location of residence.

The relationship between level of pain and family history was significant ( $p < 0.013$ ). According to American Heart Association it is said that family history plays an important role in occurrence of PAOD. This is on par with the study findings of Khaleghi, Isseh, Bailey & Kullo, (2014), which also stated that a family history of PAOD was present more often in patients with PAOD than in controls. The association was stronger in younger subjects than in older subjects. A greater number of affected relatives with PAOD were also severe.

In this study the relationship between the level of pain with regard to the intake of pain medications found to be statistically significant. It was found that the use of non opioid analgesic was relatively significant ( $p < 0.007$ ). According to Clauw & Carberg, (2012), non opioid analgesics are the treatment of fibromyalgia and other neuropathic pain states like osteoarthritis and low back pain.

On relating the coping strategies with demographic and clinical variables it was found that among the clinical variables there was a significant relationship between passive coping and intake of pain medication ( $p = 0.032$ ).

## **6. Conclusion**

The study findings are of statistical significance which has thrown light on the level of pain and related coping strategies among the patients with peripheral arterial occlusive disease. These significant findings may have clinical significance in relation to pain management and relevant health education of subjects with PAOD.

## **7. Future Scope**

Nurses are the backbone to healthcare. His study findings will help the medical professionals to be actively involved in the provision of counseling services and regular follow up for individual patients to address their problems and concerns,

and to provide training in problem solving skills, pain management and also to enhance their adaptive coping.

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