

Ankle-Brachial Index In Assessment of Peripheral Arterial Disease In Diabetics: A Pilot Study

*Prof. Dr. Perpetua R Fernandes.
Prof cum Vice-Principal
Tilak Maharashtra Vidyapeeth
Institute of nursing education and research, Pune.
Perpetuar_fernandes@yahoo.com*

Abstract:

Cardiovascular disease is a disease that involves the [heart](#) and its [blood vessels](#). Cardiovascular disease being a non-communicable disease is the leading cause of death all over the world. Coronary artery disease accounts for the majority of the deaths. Patients with diabetes who are subjected to increased blood viscosity are at risk of developing the Peripheral arterial disease. Applicability of the ankle-brachial-index measurement as screening device for high risk was tested in the pilot study.

Methodology: Non-experimental descriptive research design was used. 30 patients attending the OPD were selected with the help of inclusion and exclusion criteria. Data was collected using the ABI index.

Results: Majority of the subjects i.e 60% were older adults belonging to the age group of 46-55 yrs and were males (60%) as compared to the females. The patients were having diabetes from 1-5 yrs. The ABI screening showed that 60% of the patients had mild obstruction (ABI 0.71-0.90), and at the risk of developing Peripheral Artery Disease. Thus ankle brachial index as an independent tool is effective and can be used to screen patients at risk of cardiovascular disease.

Conclusion: Ankle brachial index independently can be used to screen subjects at risk for cardiovascular disease.

Introduction:

Peripheral arterial disease (PAD) is common in older adults and is measured noninvasively by the ankle-brachial index (ABI). The cardiovascular deaths in older adults mostly occur in those having either clinical or subclinical CVD. Peripheral arterial disease is quite often asymptomatic and remains undetected. The ABI, as a marker of PAD, can provide important information about subclinical atherosclerosis. A. B. Newman conducted on Ankle-arm index as a marker of atherosclerosis in a follow up data of 5888 older adults. The study evaluated the risk of cardiovascular morbidity and mortality associated with a marker of PAD, and the presence of a low AAI (AAI <0.9) was found (1).

FGR Fowkes in his study Development and validation of an ankle brachial index risk model for the prediction of cardiovascular events found that An ABI risk model may help in prediction of Peripheral Arterial Disease(2). The leading disease of both men and women is the Cardiovascular disease. Older adults, have PAD, a form of CVD. It is more common in men than in women. ABI is used to screen for and identify PAD. ABI is a test that compares blood pressure at the ankle with blood pressure in the arm. A low ABI score means that a person has PAD.(3)

Helaine E. Resnick et al, conducted a study showing the relationship of High and Low Ankle Brachial Index to All-Cause and Cardiovascular Disease Mortality, in 4393 American Indians Subjects underwent bilateral ABI measurements at baseline and were followed up for 8.3 ± 2.2 years (36 589 person-years). In 216 participants (4.9%), Low ABI was present and high ABI was seen in 404 participants (9.2%). Diabetes, albuminuria, and hypertension occurred with greater frequency among persons with low (60.2%, 44.4%, and 50.1%) and high (67.8%, 49.9%, and 45.1%) .

Problem Statement:

Effectiveness of Ankle Brachial Index to determine the risk of Peripheral Arterial diseases in Diabetic patient admitted in selected hospitals.

Objective of the study

1. To find the risk of Peripheral Arterial Diseases (PAD) among diabetics with the use of Ankle Brachial Index.

Research Question:- will the Diabetics be at the risk of developing Cardiovascular disease?

Materials and Methods:-

Research Approach:-

In this study research approach used is Quantitative **descriptive exploratory approach**.

Research Design:-

The design for this research is Non experimental, descriptive design.

Setting of the study: - Smt. Kashibai Navale Medical and General Hospital in Pune.

Sample Size: 30 samples for the purpose of pilot study.

Sampling Technique : Sampling refers to the process of selecting of portion of the population to represent the entire population. In this study the sampling technique used is **Non probability Convenient Sampling technique**.

Inclusion Criteria :

Patients who are:-

1. having diabetes.
2. -willing to participate in the study.
3. admitted in the Hospital .

Exclusion Criteria: --

Patients who are:

1. Having other comorbid status like hypertension, and stroke.

Findings of the Study:

The pilot study was conducted from 10/10/2013 to 17 /10/2013 on 30 patients in the selected Hospital. 30 samples were selected by Non-probability Convenient sampling technique, based on the inclusion criteria to assess the feasibility of the study and to decide the statistical analysis and practicability of research. In this study the reliability of the tool was done by **interrater method** and **Cohen’s Kappa formula**. The reliability score was **0.83** which shows that the tool is reliable.

Table no 1. Description of subjects according to age. n=30

Demographic variable	Freq	%
Age		
25-35 yrs	05	16.5
36-45yrs	05	16.5.
46-55yrs	20	67

Majority of the patients belonged to the age group of 46-55 yrs i.e 67% whereas 16.5% belonged to the age group of 25-35 yrs and 36-45 yrs respectively.

Table no 2. Description of subjects according to gender. n=30

Demographic variable	Freq	%
Gender		
Male	18	60
Female	12	40

From the above table we can see that majority of the patients were males (60%) as compared to the female (40%).

Table no 3. Description of subjects according to duration of Diabetes Mellitus. n=30

Demographic variable	Freq	%
Recently diagnosed	06	20
Past 1 year	09	30
1-5years	12	40
5-10 years	03	10

For diabetes mellitus, 30% of them were recently diagnosed, 30% of them were diagnosed past one year, 40% of them were diagnosed for 1-5 years, and 10% of them were diagnosed for 5-10 years.

Obstruction	Peripheral Arterial Diseases status	
	Freq	%
Normal: (ABI \geq 0.90)	05	16.6
Mild obstruction (ABI 0.71-0.90)	18	60
Moderate obstruction (ABI 0.41-0.70)	07	23.4
Severe obstruction (ABI 0.00-0.40)	0	0

Table 4: Risk of Peripheral Arterial Diseases (PAD) among selected diseases

60% of the patients had mildobstruction (ABI 0.71-0.90), 23.4% of them had moderate obstruction (ABI 0.41-0.70) and 16.6% of them had normal ABI > 0.90.

Conclusion:

The study found that the Screening tool used was valid and reliable. The Screening tool Ankle brachial index independently can be used to screen the people with diabetes who at risk for cardiovascular disease.

References

1. A.B. Newman, D S Siscovick, T A Manolio, J Polak, L P Fried, N O Borhani and S K Wolfson, Ankle-arm index as a marker of atherosclerosis in the Cardiovascular Health Study. Cardiovascular Heart Study (CHS) Collaborative Research Group, Print ISSN: 0009-7322. Online ISSN: 1524-4539.
2. FGR Fowkes, A study on Development and validation of an ankle brachial index risk model for the prediction of cardiovascular events, 2013 .
3. Screening for Peripheral Artery Disease and Cardiovascular Disease Risk Assessment with Ankle Brachial Index in Adults, September 2013.
4. Lynn Shemanski, Ankle-Arm Index as a Predictor of Cardiovascular Disease and Mortality in the Cardiovascular Health Study, August 4, 1998.
5. Helaine E. Resnick, Clinical Investigation and Reports Relationship of High and Low Ankle Brachial Index to All-Cause and Cardiovascular Disease Mortality, 2010.