

**“USEFULNESS OF PULSE OXIMETRY AND ANKLE
BRACHIAL INDEX FOR SCREENING ASYMPTOMATIC
PERIPHERAL VASCULAR DISEASE IN TYPE 2 DIABETES
MELLITUS”**

THESIS ABSTRACT

INTRODUCTION:

Diabetic patients more frequently develop symptomatic forms of Peripheral Vascular Disease, resulting in majority of major amputation surgeries in the lower extremities. The odds for major lower extremity amputation in patients with diabetes mellitus are 12 times when compared with that of the non-diabetic population. Early detection and timely intervention can prevent this significant disability.

OBJECTIVES:

To compare Pulse oximetry and Ankle brachial index (ABI) separately and in combination with a standard reference method - Duplex Ultrasonography of the Lower Limb arteries to determine the diagnostic accuracy for screening in asymptomatic patients with Type 2 diabetes mellitus.

METHODS:

This cross-sectional study was conducted in 2016 at our tertiary hospital in Chennai among out-patient and in-patients with diabetes mellitus. Type 2 Diabetes Mellitus patients, asymptomatic with regards to symptoms and signs of Peripheral Vascular Disease (PVD), aged above 30 years were included. Pulse Oximetry was performed using a pulse oximeter and ABI using

sphygmomanometer cuffs and duplex ultrasonography of femoral, popliteal, tibial, posterior tibial and dorsalis pedis arteries was done. A diagnosis of PVD was based on: monophasic waveforms in any artery by duplex ultrasonography, toe saturation being less than finger saturation by >2% or if foot saturation decreased by >2% in an elevated position and an ABI <0.90.

RESULTS:

Among 148 patients included in the study, prevalence of PVD was 22.4%. The PVD group had a higher proportion of elderly, males, current smokers, long-standing diabetics and co-morbidities. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of pulse oximetry were 77.1 %, 91.9 %, 75 % and 84.5 % respectively, while those of ABI were 82.9 %, 93.8 %, 80.6 % and 94.6 % respectively. Parallel testing had net sensitivity increased to 93.6 % and diagnostic accuracy increased to 95.5 %.

CONCLUSION:

Pulse Oximetry is as good as Ankle Brachial Index in the initial screening of patients with asymptomatic Peripheral Vascular Disease. It will be an ideal cheap simple-to-use potential screening tool that can be used at the grassroots level by medical and paramedical personnel alike. The combination of the two tests, that is Pulse oximetry and Ankle Brachial Index has an even higher sensitivity and diagnostic accuracy than either of the two tests alone.

KEYWORDS : Pulse Oximetry, Ankle Brachial Index, Peripheral Vascular Disease and Diabetes Mellitus