# RELATION BETWEEN INTER-ARM BLOOD PRESSURE DIFFERENCE AND TARGET ORGAN DAMAGE IN PATIENTS WITH TYPE 2 DIABETES

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## Introduction

Diabetes is a chronic, complicated disease defined by hyperglycemia, affecting around 537 million adults worldwide.
The microvascular complications of diabetes are due to hyperglycemia, while the macrovascular complications involve the pathological process of atherosclerosis.
Hypertension is twice as common in individuals with diabetes, and more than half of individuals with diabetes eventually develop hypertension as well. Therefore, the presence of hypertension with diabetes increases the risk of development of complications of diabetes.
Systolic inter-arm difference (IAD) is defined as a systolic blood pressure difference of 10 mmHg or more between both arms, which is suggested to be due to atherosclerosis of the large vessels. A difference of less than 10 mmHg is common and is considered normal.
Systolic IAD has been linked to an increased risk of cardiovascular disease, PAD, and all-cause mortality. Nonetheless, systolic IAD can be a good predictor of subclinical atherosclerosis and the consequent cardiovascular events.

## Aim of the Work

The aim of this study was to:
1. Identify the systolic inter-arm blood pressure difference (IAD) in T2DM patients in Alexandria.
2. Study the relation between systolic IAD and target organ damage in T2DM.

## Subjects and Methods

This cross-sectional study was conducted on 120 patients with T2DM, recruited from inpatient and outpatient clinic of Diabetes Unit, Alexandria Main University Hospital.
Thorough history taking and complete physical examination were done.
Blood pressure was measured in both arms using an automated blood pressure device "OMRON MX2 Basic".
Systolic IAD was calculated by the difference of systolic blood pressure between both arms.

Ankle systolic pressure was measured using hand-held Doppler and ABPI was calculated by dividing the ankle systolic pressure by the brachial systolic blood pressure.

**The laboratory investigations done:**
***Glycemic profile:*** Fasting plasma glucose (FPG), glycated hemoglobin (HbA1c).
***Renal functions:*** Serum creatinine, eGFR which was calculated using CKD-EPI equation.
***Lipid profile:*** serum cholesterol, serum triglycerides, LDL-C, HDL-C.
***Urine Sample:*** urine analysis and urinary albumin to creatinine ratio.

Fundus examination was performed by ophthalmologists for detection of diabetic retinopathy.

## Results

**Table:** Descriptive analysis of systolic IAD data of the studied subjects

| Variable | Descriptive Statistic |
|---|---|
| **Systolic IAD** | |
| Median (IQR) | 7 (4-12.5) |
| Minimum - Maximum | (0 – 31) |
| **Systolic IAD categories** | |
| < 10 mmHg | 76 |
| ≥ 10 mmHg | 44 |
| **Higher Arm BP reading** | |
| Right arm | 80 |
| Left arm | 37 |
| Equal | 3 |

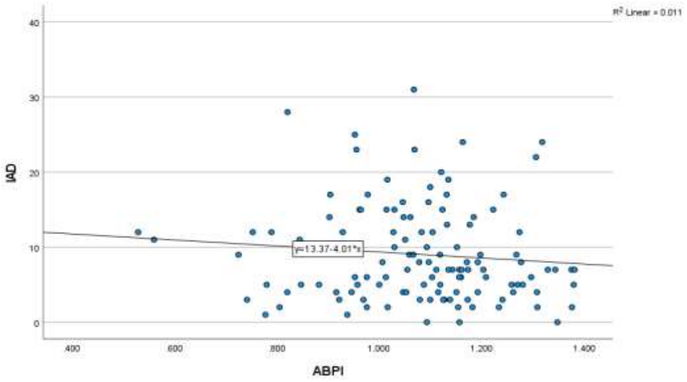


**Figure:** Positive correlation between systolic IAD and ABPI

## Conclusion

- Bilateral BP measurement and systolic IAD determination, especially in groups with an increased cardiovascular risk, such as individuals with diabetes, is an important priority, where systolic IAD can be linked to target organ damage in these groups.
- Furthermore, the development of systolic IAD can occur at any time which may be precipitated by aging and may deteriorate with the progression of atherosclerosis.