Clinical Characteristics and Outcomes of Young Patients with ST-segment Elevation Myocardial Infarction in Northern Saskatchewan

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BACKGROUND

- Although more common in older patients, ST-segment elevation myocardial infarction (STEMI) it not unique to older population.

- Young compared with older patients presenting with STEMI often have differential and non-traditional risk profiles, angiographic characteristics and clinical outcomes

- Given Northern Saskatchewan's unique spatial geography and patient demographics, investigating how outcomes of young compared with older patients presenting with STEMI would fulfill an important clinical need.

OBJECTIVES

- To describe and compare demographic characteristics, clinical attributes and cardiovascular outcomes between young adults ≤ 45 years and adults >46 years

METHODS

Study Design and population
- Prospective, single-site cohort analysis
- Consecutive STEMI admissions (n=706) at the Royal University Hospital, Saskatoon
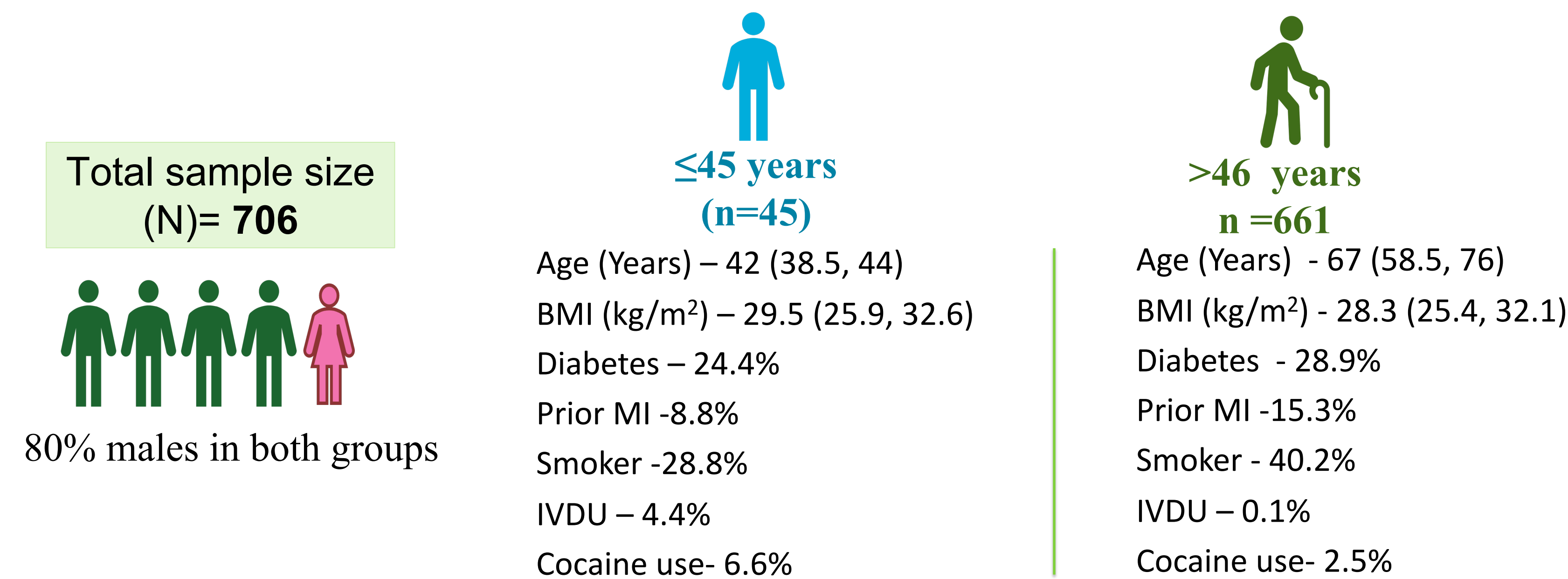- No exclusion criteria applied

Data sources
- Data collected prospectively between March 15, 2019, to August 30th, 2021, at the ER of RUH.
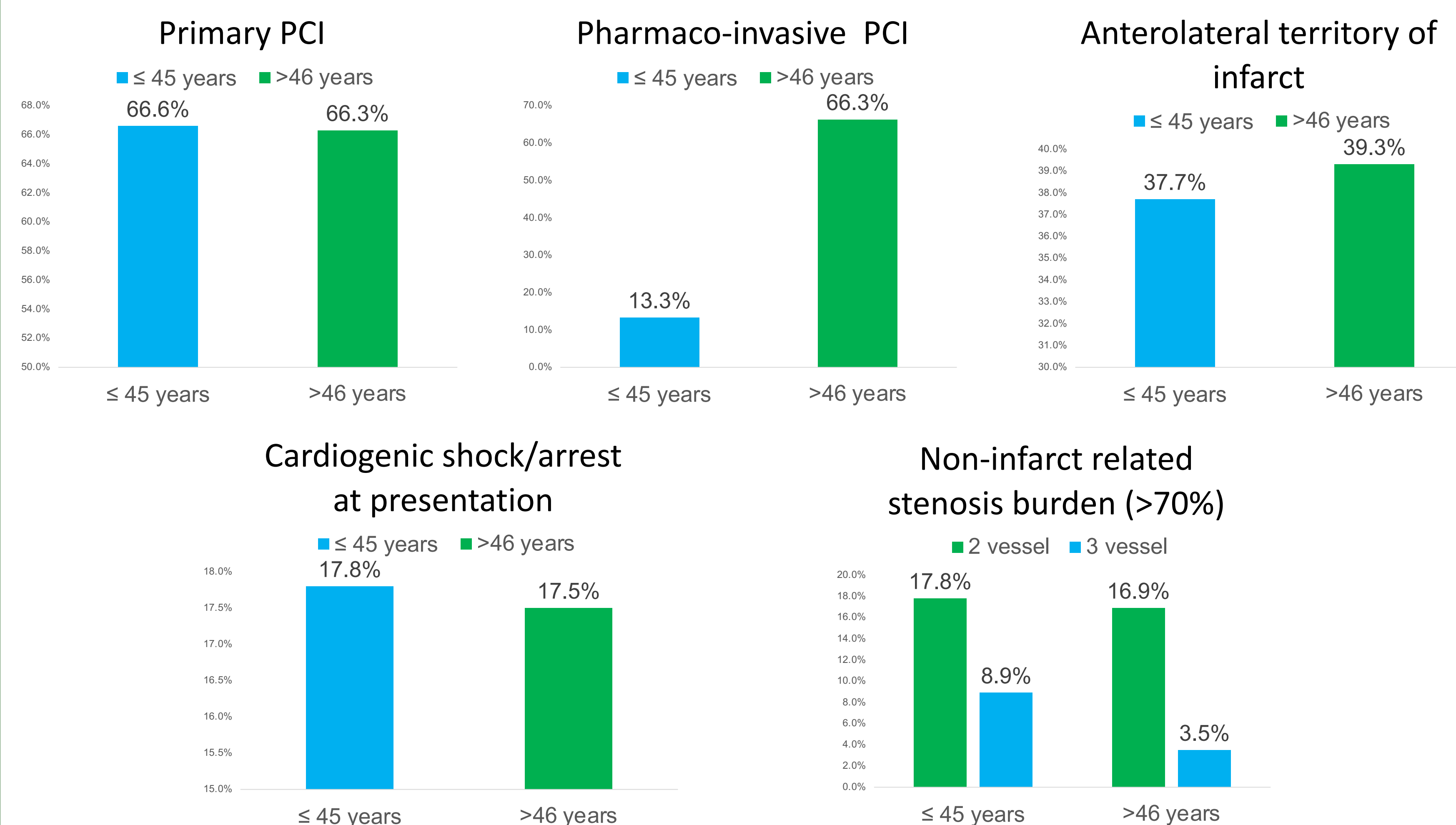
Variables
- Patient characteristics captured include demographics, risk factors, in-hospital cardiovascular events and outcomes.
- Categorical variables are described as frequency percentages, and continuous variables using median 25th, 75th percentiles
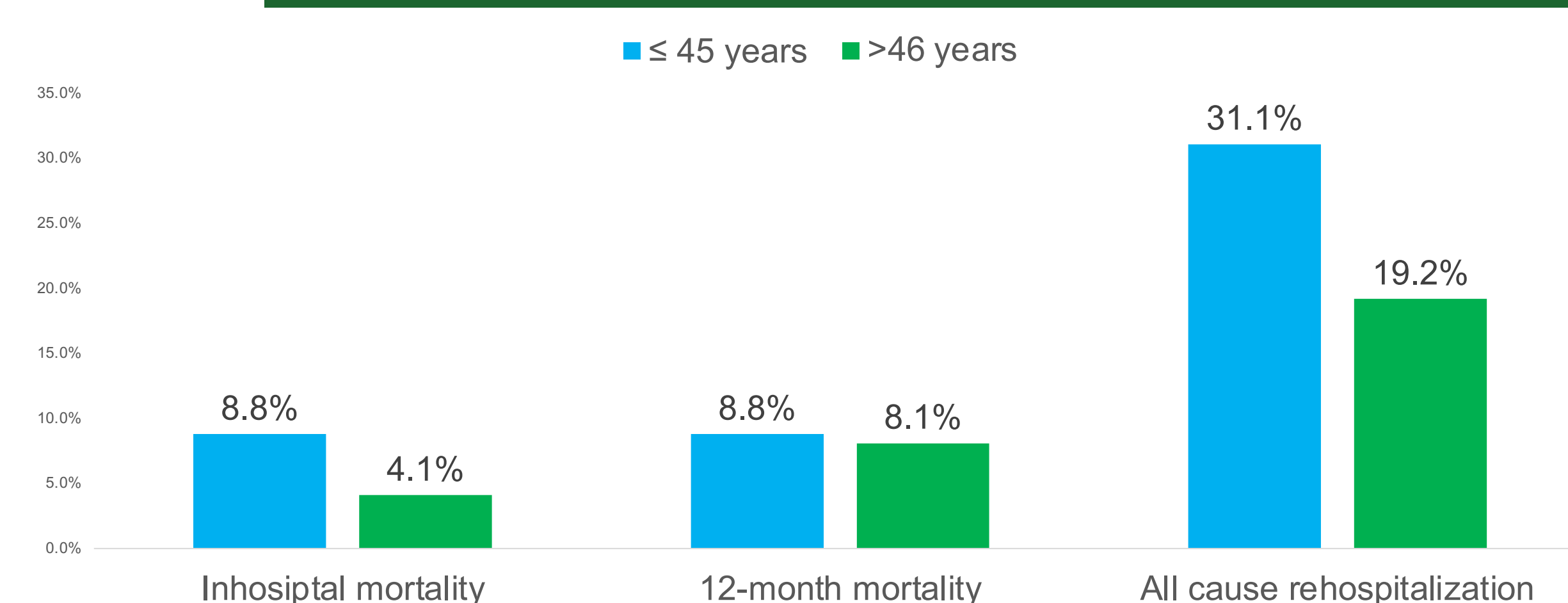
RESULTS

Demographics and Risk Profile

Total sample size (N)= 706

80% males in both groups

≤45 years (n=45)
- Age (Years) – 42 (38.5, 44)
- BMI (kg/m^2) – 29.5 (25.9, 32.6)
- Diabetes – 24.4%
- Prior MI -8.8%
- Smoker -28.8%
- IVDU – 4.4%
- Cocaine use- 6.6%

>46 years n =661
- Age (Years) - 67 (58.5, 76)
- BMI (kg/m^2) - 28.3 (25.4, 32.1)
- Diabetes - 28.9%
- Prior MI -15.3%
- Smoker - 40.2%
- IVDU – 0.1%
- Cocaine use- 2.5%

Clinical characteristics and in-hospital events

Primary PCI: ≤ 45 years 66.6%, >46 years 66.3%

Pharmaco-invasive PCI: ≤ 45 years 13.3%, >46 years 66.3%

Anterolateral territory of infarct: ≤ 45 years 37.7%, >46 years 39.3%

Cardiogenic shock/arrest at presentation: ≤ 45 years 17.8%, >46 years 17.5%

Non-infarct related stenosis burden (>70%): 2 vessel ≤ 45 years 17.8%, 3 vessel ≤ 45 years 8.9%; 2 vessel >46 years 16.9%, 3 vessel >46 years 3.5%

- The young adult (≤45 years) group had slower time (in hours) from first medical contact (FMC) to primary PCI compared with >46 years (1.9 hours vs 1.5 hours)

Outcomes

Inhospital mortality: ≤ 45 years 8.8%, >46 years 4.1%

12-month mortality: ≤ 45 years 8.8%, >46 years 8.1%

All cause rehospitalization: ≤ 45 years 31.1%, >46 years 19.2%

DISCUSSION

- The burden of both traditional and non-traditional risk factors appears largely comparable between the two groups.

- The infarct territory, reperfusion strategies and proportion of patients presenting with cardiac arrest/cardiogenic shock were also comparable between the two groups.

- No significant differences were evident for in-hospital or 1-year mortality or all-cause re-hospitalization at 1-year.

CONCLUSION

- In Northern Saskatchewan, young compared with older STEMI present with comparable traditional and non-traditional cardiovascular risk, however with a surprisingly high background burden of cocaine and intravenous drug use.

- Similarly, high rates of cardiogenic shock and in-hospital mortality are evident across both age groups. Our findings identify local unique characteristics aimed at improving risk and outcomes of young STEMI patients in Northern Saskatchewan.

REFERENCES

Sawada H, Ando H, Takashima H, et al. Epidemiological Features and Clinical Presentations of Acute Coronary Syndrome in Young Patients. *Intern Med* [Internet]. 2020 [cited 2021 May 31]; 59(9):1125-1131. Available from: 10.2169/internalmedicine.4138-19

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