

Coronary Anatomy, Ischemia and Angina: Associations at Baseline in the ISCHEMIA Trial

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Background

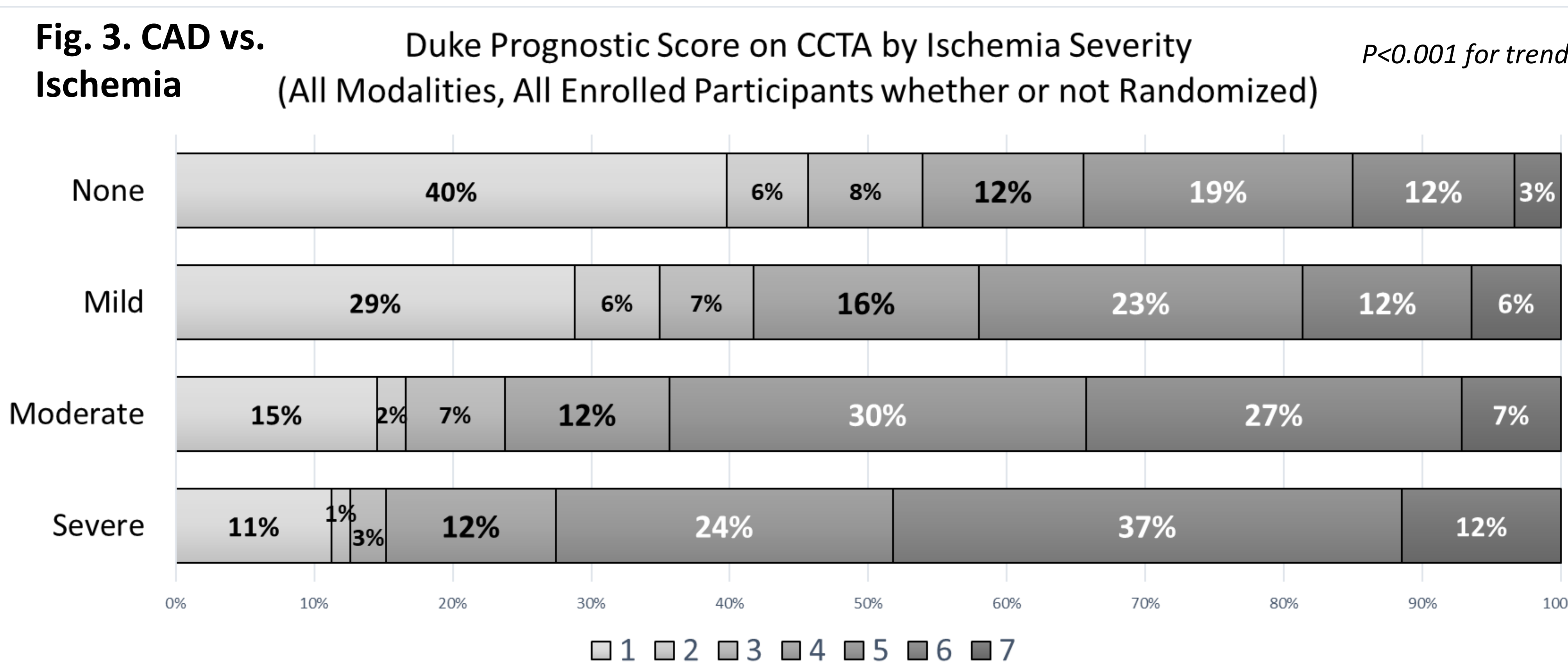
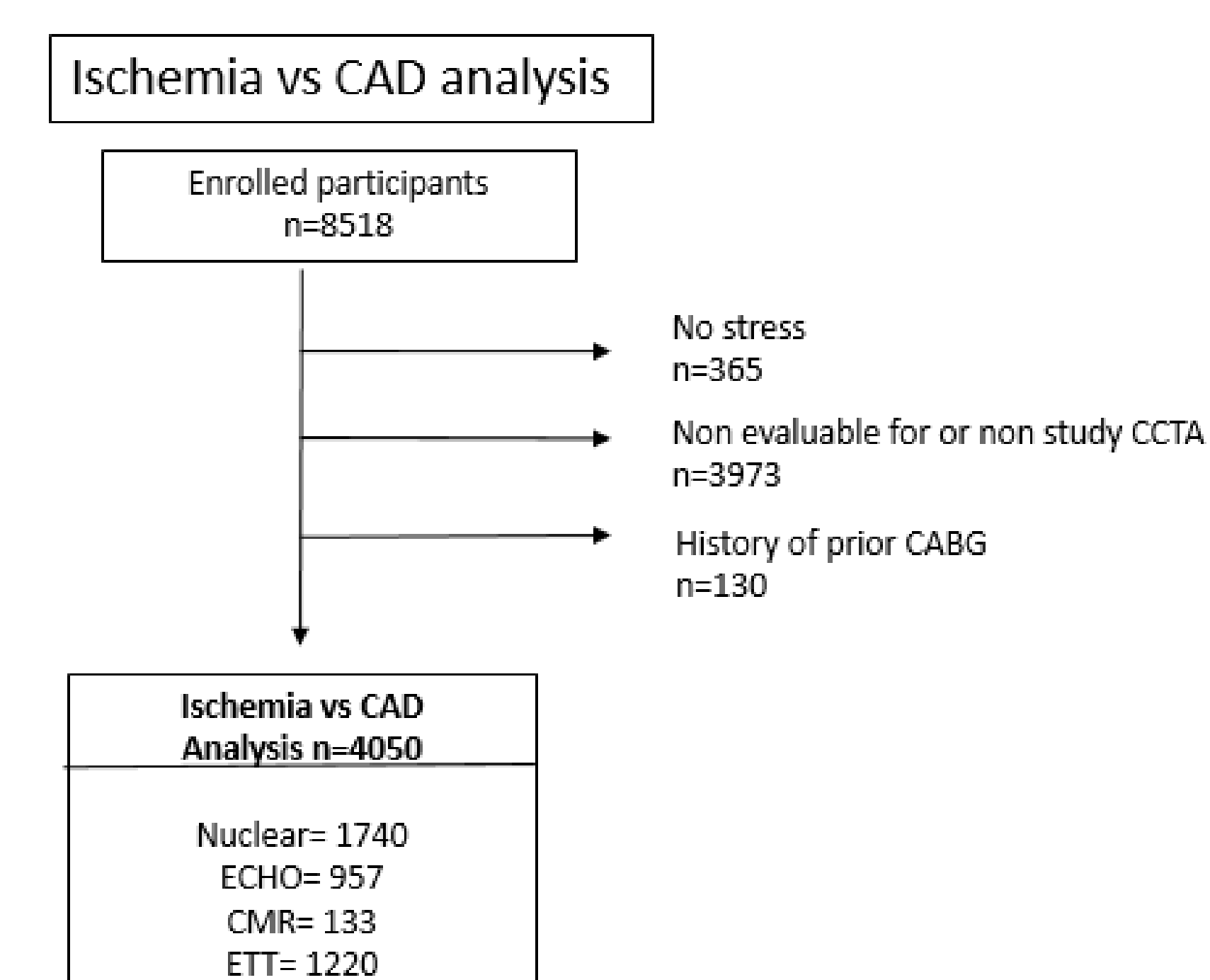
- The relationship between anatomic CAD, ischemia and angina is complicated by many factors (e.g., activity level, collateral flow).
- The ISCHEMIA trial program offers a unique opportunity to investigate the inter-relationship between CAD, ischemia and angina because each was measured in a standardized manner.
- The trial primary analysis found no evidence of a difference between treatment strategies in the primary or secondary endpoints, but there was improvement in angina-free status among those with angina at randomization.
- Thus relationships between angina, ischemia and CAD are important in applying trial results.

Methods

- ISCHEMIA was a large multi-center randomized trial of patients with known or suspected SIHD selected for enrollment based on the finding of moderate or severe ischemia on a stress imaging test (nuclear, echocardiography or cardiac MR [CMR] or severe ischemia on a non-imaging exercise tolerance test (ETT). Stress tests were interpreted at core laboratories.
- ETT participants were required to have angina either before, during or after the stress test, while stress imaging participants were not.
- Most participants underwent coronary CT angiography (CCTA), also interpreted by a study core laboratory where readers were blinded to stress testing results. This analysis only includes participants who underwent CCTA.
- Randomized participants underwent assessment of angina status using the Seattle Angina Questionnaire (SAQ).
- For analysis of CAD vs. ischemia, enrolled participants who had an interpretable stress test and CCTA were included even if not randomized. Participants with history of prior coronary artery bypass grafting were excluded.
- The primary angina analyses were restricted to participants who did not have anti-anginal medications changed in the last 3 months

Results

Fig. 1: Ischemia vs. CAD Analysis



Modified Duke Prognostic Index on CCTA

- 1 : No plaque or <50% plaque in 1 vessel, not proximal
- 2 : ≥2 mild (25-49%) vessels with proximal plaque in 1 artery
- 3 : 1 moderate (50-69%) vessel
- 4 : 2 moderate or 1 severe (≥70%) vessel
- 5 : 3 moderate or 2 severe or severe proximal LAD
- 6 : 3 severe or 2 severe (≥70%) including proximal LAD
- 7 : Left main ≥50%

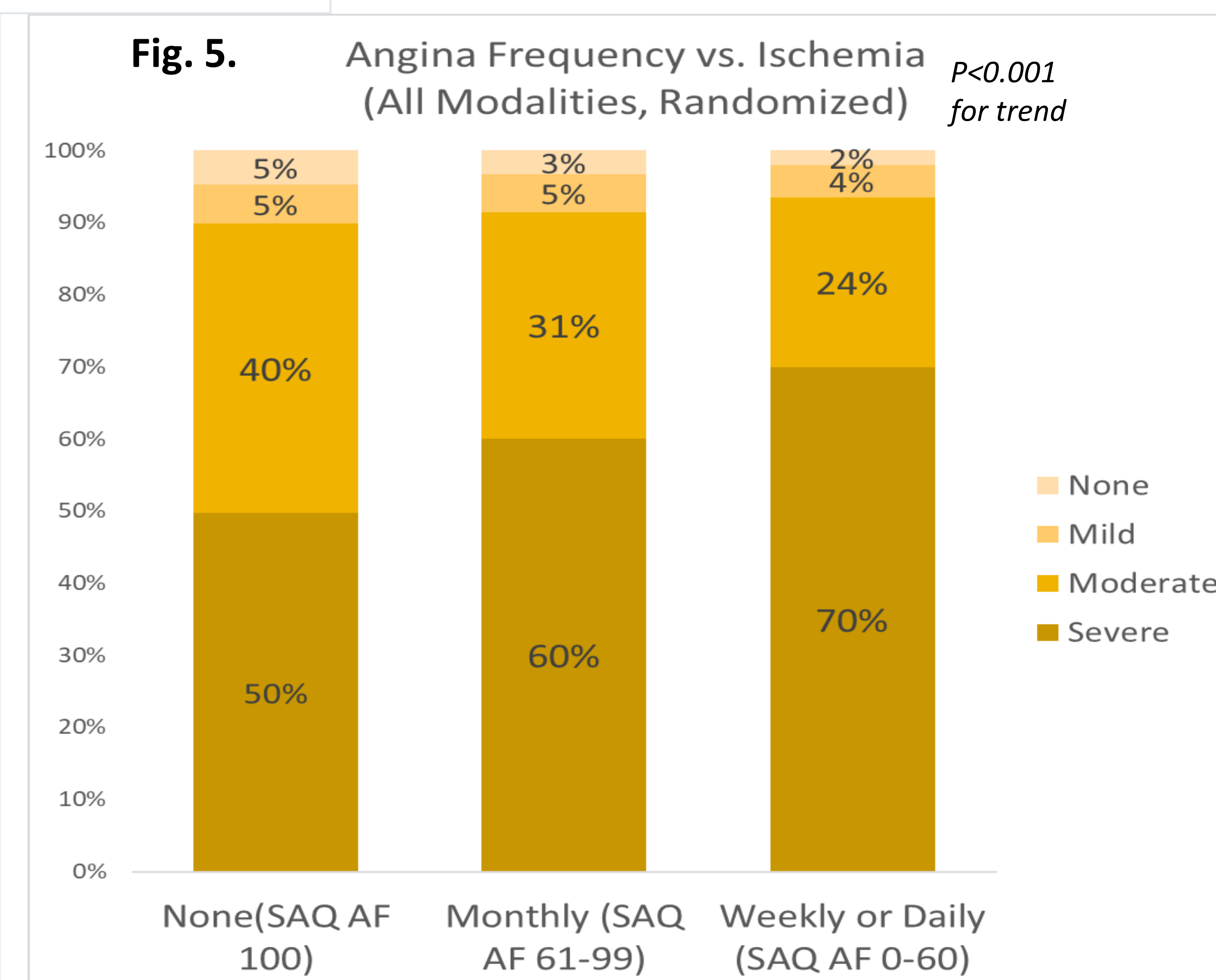
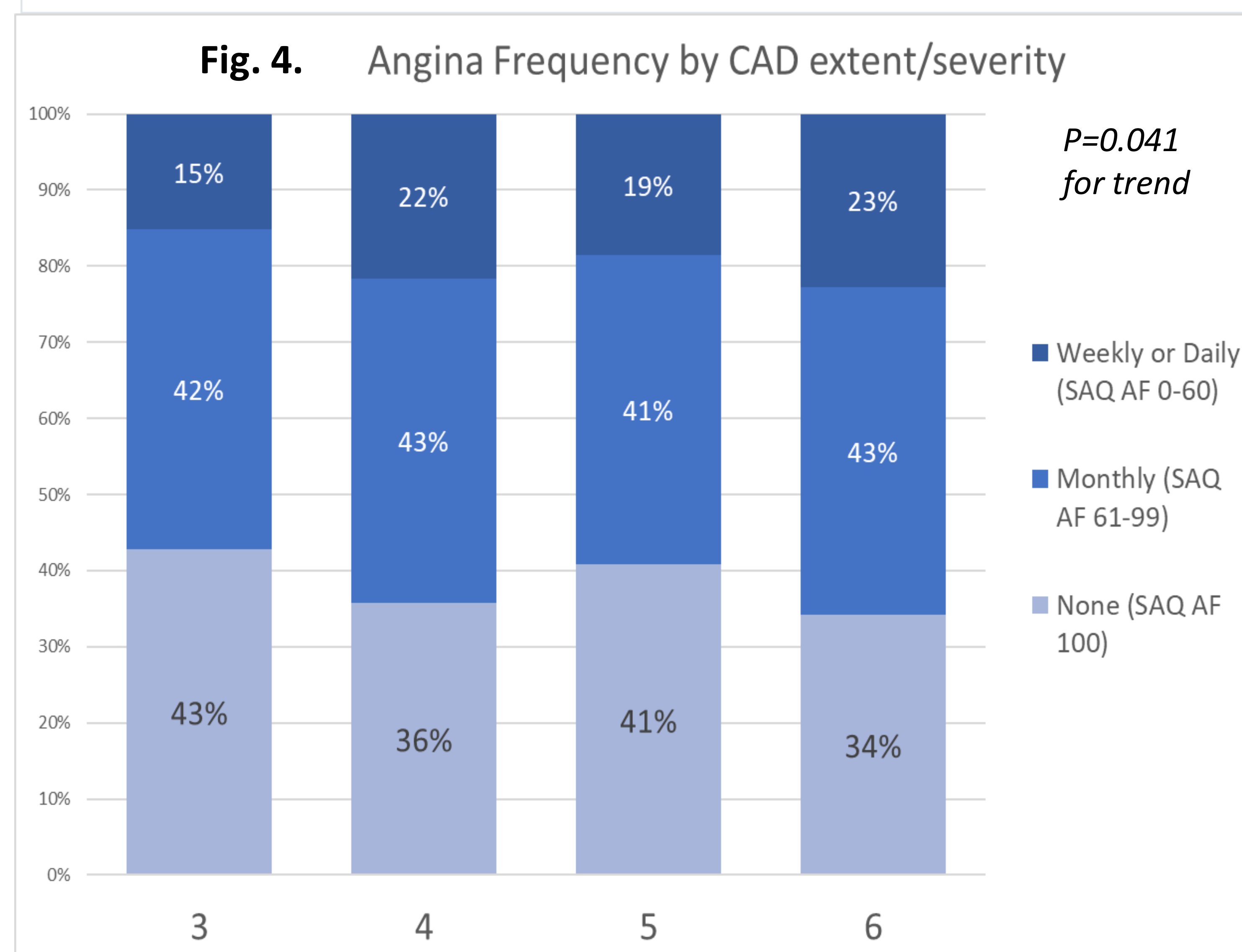
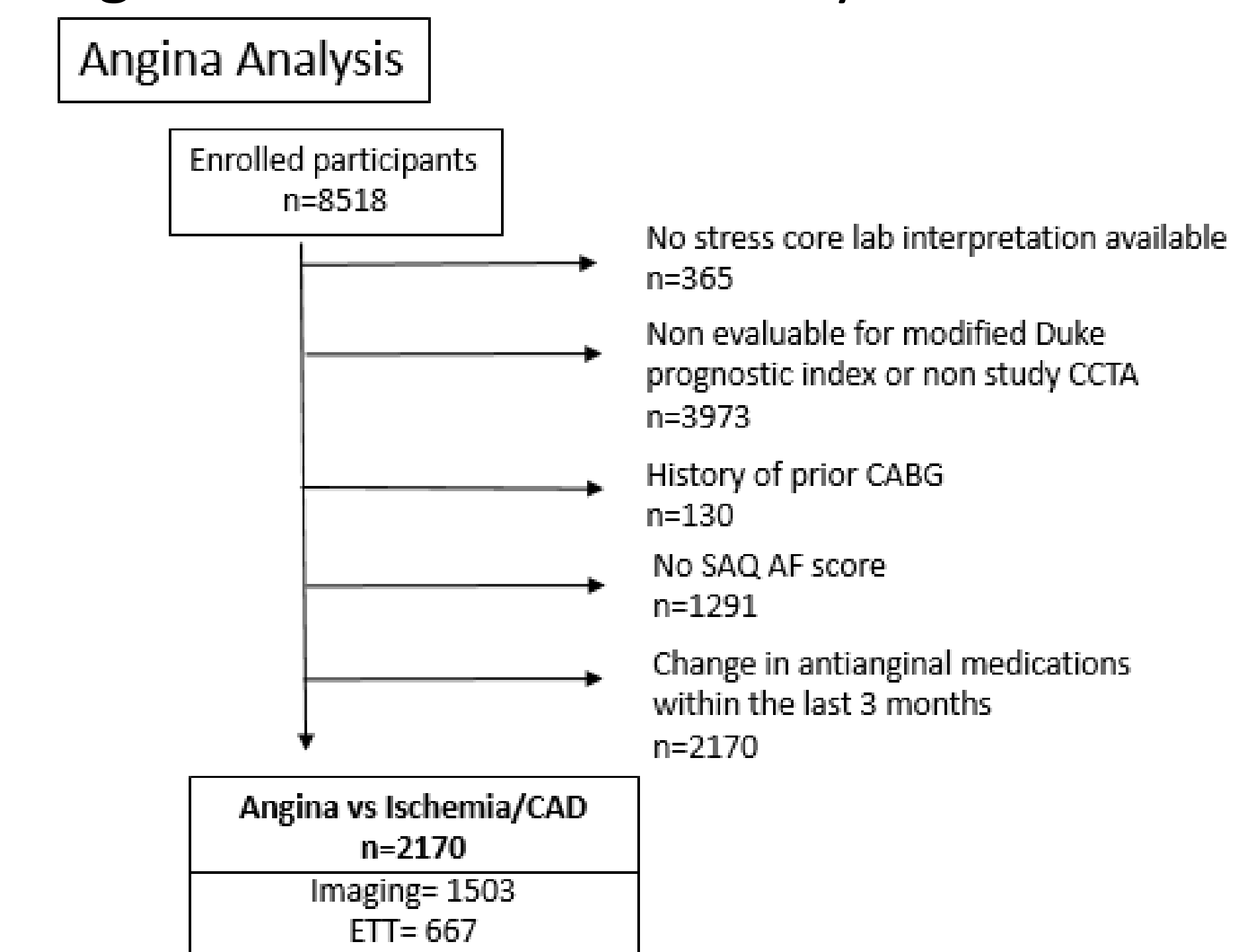
Numbers of Participants:

No Angina: 807; Monthly: 914; Weekly: 413; Daily: 36
Stress Nuclear: 1740; Stress Echo: 957; Stress CMR: 133
Exercise ECG: 1220

Angina Frequency: analyses limited to no change in anti-anginal medications within 3 months. No change in results with full cohort in sensitivity analysis.

- CAD extent/severity and ischemia severity were correlated.
- Anatomic CAD and ischemia severity were each significantly associated with poorer SAQ AF.
- On multivariate analysis, poorer SAQ AF was associated with:
 - Female sex (odds ratio [OR] 1.4, 95% CI 1.1-1.7)
 - Younger age (OR 0.8 for 65 vs. 55y, CI 0.7-0.9)
 - Baseline use of antianginals (OR 2.1, CI 1.7-2.5) and
 - Severe ischemia (OR 1.4, CI 1.0-1.9), but not CAD.

Fig. 2: Ischemia vs. CAD Analysis



Conclusions

- CAD extent/severity, ischemia severity and angina frequency are significantly related to one another but the associations are not strong, particularly for angina.
- Clinical factors and ischemia were more important than CAD as contributors to angina frequency.

