Impact of Tobacco Use and Gender on Myocardial Infarction Risk within the Young Adult Population with BMI > 30

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Introduction

- Heart disease is the current leading cause of death in the US. [1]
- Also known as a heart attack, myocardial infarction (MI) is the most significant manifestation of heart disease. [2]
- An MI refers to the sudden and complete blockage of a coronary artery, stopping the flow of blood to the heart muscle.[3]
- Smokers are 2-4 times more likely to develop heart disease. [4]
- Previous research efforts have reduced MI rates in older adults but not young adults.[5]
- The incidence of MI among young adults has risen in the past 25 years.[6]
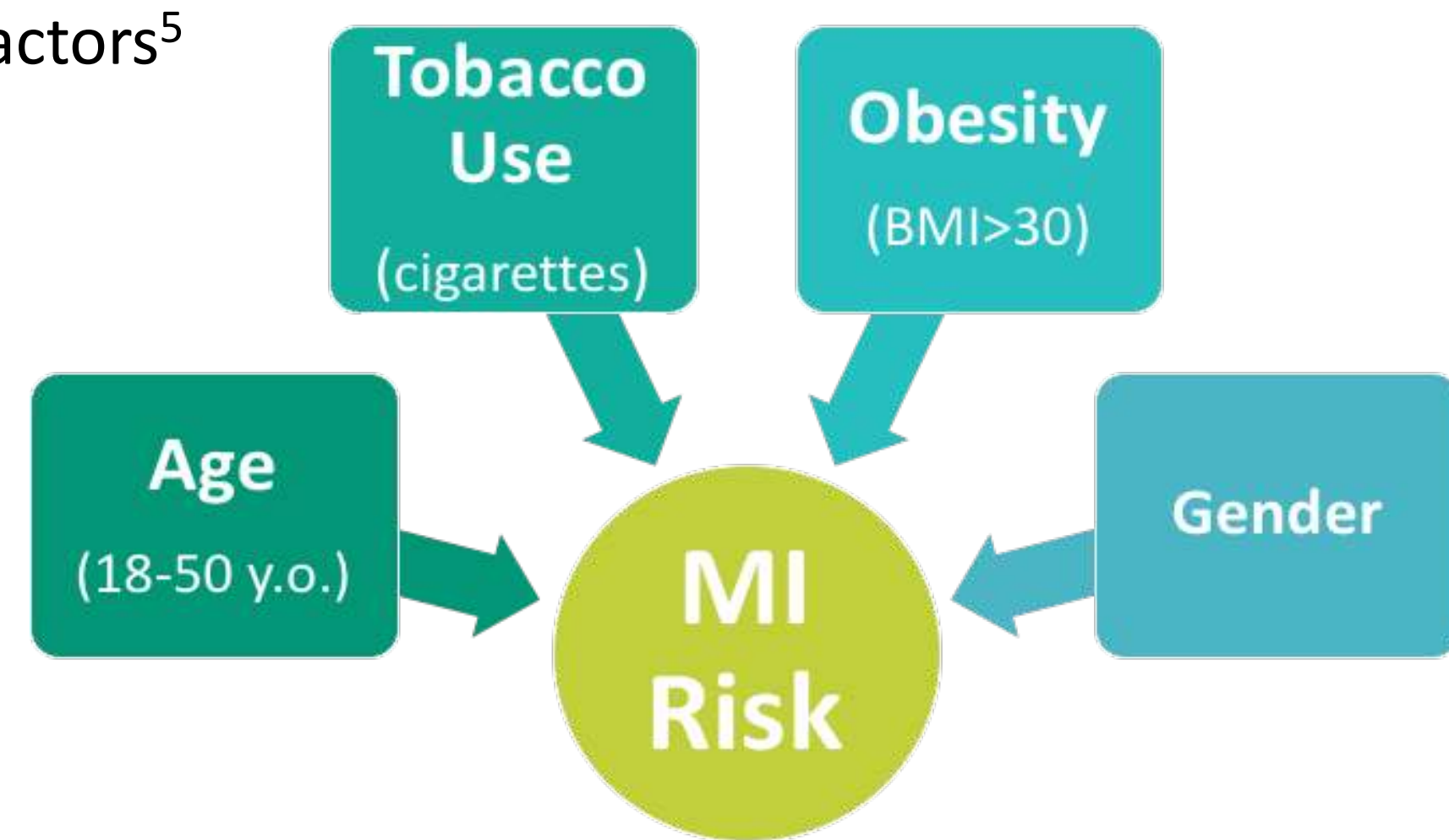- Key risk factors[5]

Figure 1. Visual Representation of MI Risk Factors.

Purpose/Research Question

The purpose of this study is to determine whether a young, obese smoker's chance of having a heart attack will differ depending on whether they are a man or a woman.

How does the impact of tobacco use on MI risk differ between men and women aged 18-50 with BMI >30?

Methodology

- Retrospective chart analysis of data from NGHS Epic was used.
- Data collected in the 2015-2022 range and de-identified before analysis.
- Inclusion factors
  - Aged 18-50
  - BMI > 30
  - All races, ethnicities, and genders (sex assigned at birth)
- Exclusion factors
  - Use of cocaine, amphetamine, or marijuana
  - History of genetic hypercoagulation
  - Lack of information on tobacco use
- Resulting sample populations evaluated for documented MI history and tobacco use.
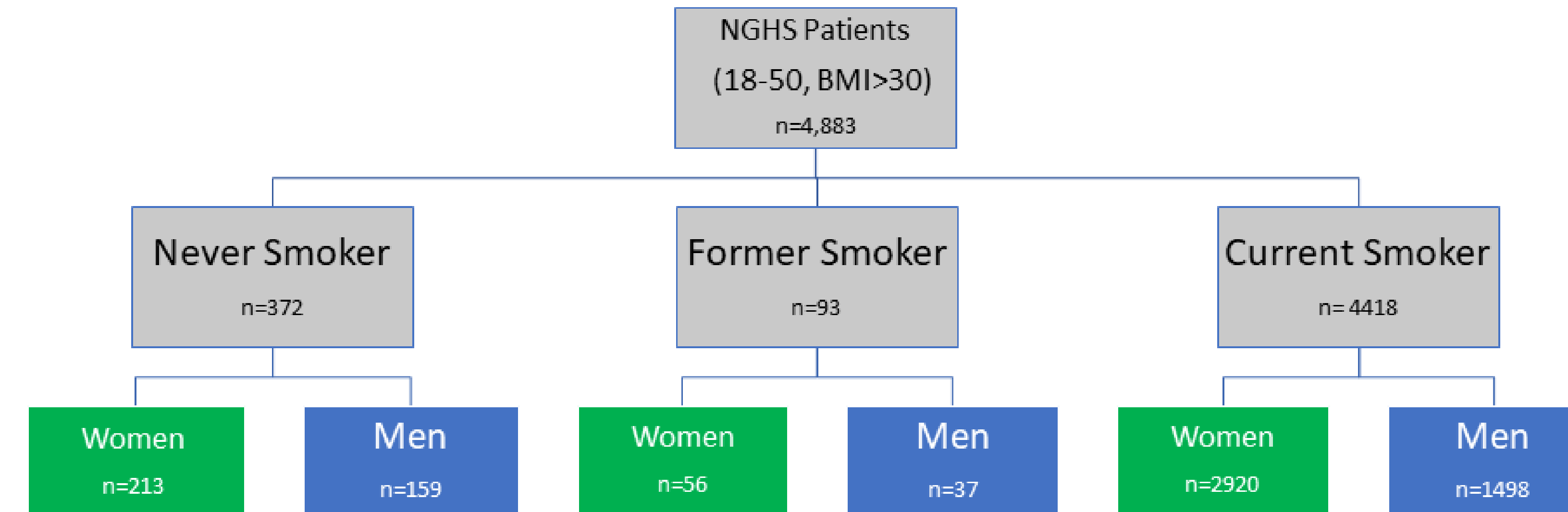
Results

Figure 2. Flowchart depicting division of patient groups in question. Tobacco usage (row 2) is defined as Never Smoker, Former Smoker (quit over 12 months prior), or Current Smoker. The number of patients per group is signified by "n."
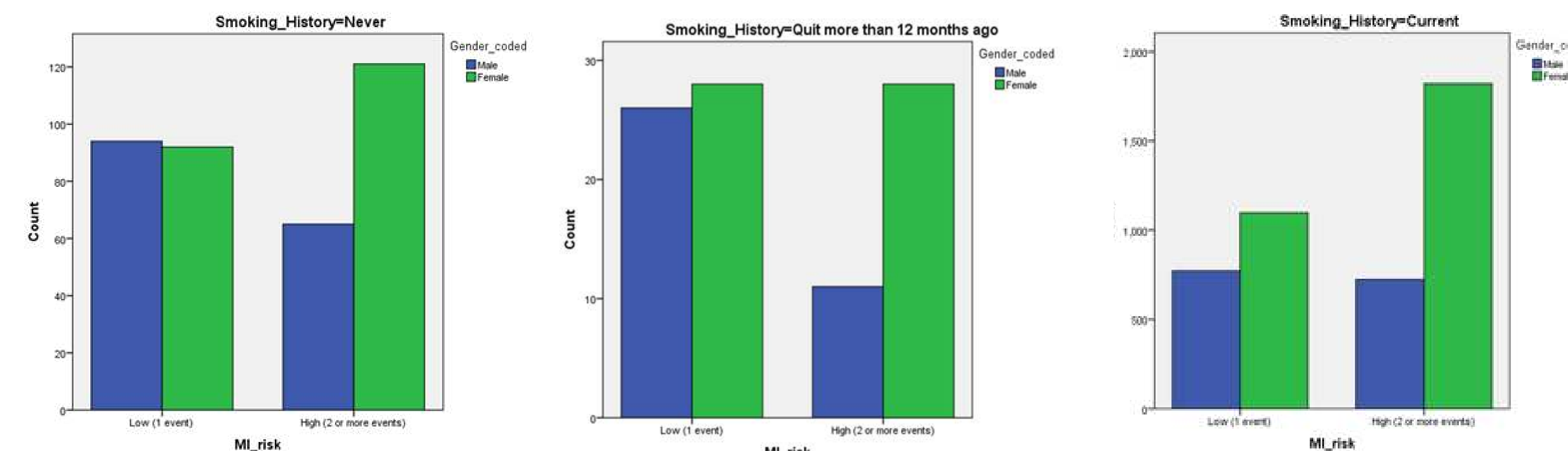

Figure 3. Three bar graphs comparing low-risk versus high-risk distributions of patients from the six established patient cohorts (see Figure 2). Low-risk patients are defined as those with one documented MI event. High-risk patients have two or more documented MI events. Low and high are designated on the x-axis of each graph, and the y-axis shows the number of patients.

Qualitative Interview

Two semi-structured interviews conducted with young adult patients at NGHS Cardiac Rehab Center in 2022.

Patient #1
- 47 y/o woman post CABG surgery
- Quit smoking after 30 years
- EF 55-60%

"I was told that if I didn't quit smoking...I would have approximately a 7-year life expectancy...and I've got 3 kids and 8 grandchildren, so that's a big incentive."

Patient #2
- 45 y/o man with heart failure
- Active smoker
- EF 20-25%

"When I was in the military, I used to smoke...and it was just a lot of stress...making sure everything's working like it's supposed to."

Discussion

- **In this sample of young adult patients with BMI's over 30, women were significantly more likely than men to be categorized as high risk.**
  - The factor of tobacco use contributed most significantly to this difference between the genders.
- Among current smokers, women were 1.7 times more likely than men to be high risk.
- In the qualitative interviews, both patients identified stress as a common trigger for tobacco use.
  - A key difference is that Patient #1 identified family values as a primary motivation for quitting.
  - Patient #2 implied that the presence of spouse who also smokes may be a barrier to personal cessation efforts.

Conclusion/Recommendations

- Heart attacks will continue to harm the health and lives of individuals.
- **Further research should be done to understand why women are more likely to experience a greater number of MI's than men.**
- The physiological and lifestyle factors associated with tobacco use should be investigated.
- Future efforts should focus on developing cessation plans for a patient's unique triggers and barriers to success.
- Health education regarding smoking and obesity should be emphasized in schools and primary care practices.
- A limitation of this study is the sample size. Future data collection on a larger scale could better describe the MI risk profile following cessation of smoking.
- The themes identified in the two interviews could be further supported by a robust case study with more interviewees.

References

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