

Problem & PURPOSE

- Prolonged fasting (>24 hours) was linked to longer ICU stays and delayed post-operative recovery, primarily due to increased complications and slower healing (Fachini et al., 2022).
- Fasting reduces bowel motility, worsening post-operative constipation, especially in patients already at risk due to medication and immobility (Ezpeleta et al., 2024).
- Muscle weakness and reduced physical strength from fasting negatively impacted mobility assessments and delayed participation in physical therapy, extending recovery time (Ezpeleta et al., 2024).
- The project implemented Enhanced Recovery After Surgery (ERAS) protocols aimed at improving bowel motility, reducing post-operative constipation, and shortening hospital stays by promoting early nutrition and mobilization.

Available Knowledge & Rationale

- ERAS protocols aim to enhance surgical outcomes by minimizing surgical stress, preserving organ function, reducing complications, and shortening hospital stays across various surgical specialties (e.g., vascular, bladder, and abdominal wall surgeries).
- Key components of ERAS include preoperative education, nutrition (e.g., clear liquids and carbohydrate drinks), non-opioid pain management, and early mobilization, all of which improve recovery, reduce costs, and lower readmission rates.
- High compliance with ERAS protocols is associated with faster bowel recovery, a lower incidence of postoperative ileus, fewer complications, and improved patient satisfaction, ultimately promoting a better quality of life and potentially increasing life expectancy.
- The Iowa Model of Evidence-Based Practice guided the implementation of ERAS, addressing prolonged preoperative fasting through a multidisciplinary approach and evidence-based changes that were monitored and shared to promote continuous improvement.

Discussion

Summary

- The findings did not confirm the expected benefits of ERAS, suggesting the need for further investigation.
- Short project duration may have limited the ability to observe long-term outcomes.
- Possible influencing factors: patient co-morbidities, variability, or issues within the protocol.
- The project provided real-world, measurable data, enhancing credibility and offering a basis for refining and adapting ERAS for diverse populations.

Interpretation

- Overall outcomes were similar between the pre-and post-intervention groups, except for a worse performance in Cardiac Rehab Step 5 in the post-intervention group.
- The findings did not align with prior ERAS research (e.g., Agnes et al., Grilo et al., Hanna), which had shown improved bowel function and shorter hospital stays.
- Possible reasons for discrepancies: patient demographics, co-morbidities, protocol adherence, medication interactions, and inconsistent rehab assessments or follow-up.
- The decline in cardiac rehab outcomes may indicate gaps in rehabilitation protocols and could lead to greater long-term resource utilization despite potential short-term hospital cost savings.

Limitations

- **Limitations:** The small sample size and short 6-week timeframe limited the generalizability and ability to isolate intervention effects.
- **Confounding factors:** Co-morbidities, medications, lifestyle, and pre-surgical hospitalization may have impacted recovery outcomes.
- **All participants were hospitalized before surgery**, potentially skewing results compared to healthier, directly admitted surgical patients.
- **Recommendations:** Extend the study duration to at least one year and account for additional health factors in future research.

Methods

Context

- Quality improvement project conducted at a Western U.S. not-for-profit hospital with 310 licensed beds and Level II Trauma Center status.
- The hospital performed ~7,400 inpatient and ~11,500 outpatient surgeries annually across 63 specialties.
- Target population: inpatient cardiovascular surgery patients with ~20 CABG procedures/month (4–5 from inpatient setting).
- The site's cardiovascular surgeon, lead Cardiovascular Anesthesiologist, and nursing unit manager approved the project.

Interventions

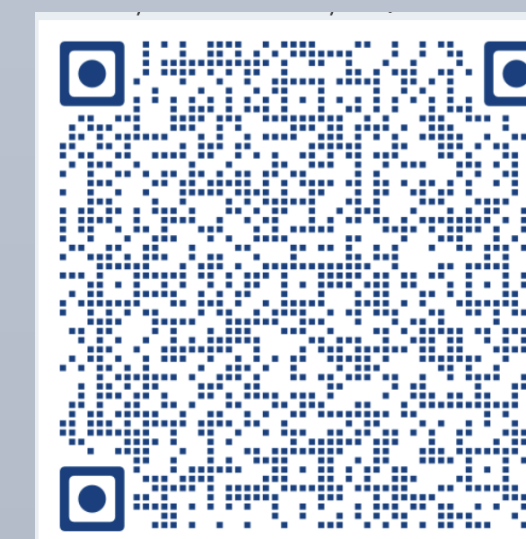
- **Goal:** Reduce NPO times for CABG patients by allowing clear liquids and a carbohydrate-rich drink closer to surgery.
- **Preparation:** Pre-op order sets modified; nurses trained via 10–15 minute sessions and follow-up email reminders.
- **Protocol Details:**
 - ❖ NPO after midnight discontinued.
 - ❖ Clear liquids are permitted up to 6 hours before surgery (8 hours for patients with gastrointestinal conditions).
 - ❖ All patients received a carbohydrate-rich drink 2 hours before surgery.
 - ❖ Patient handouts and updated fasting instructions were provided during pre-op consultations.
- **Implementation:** ERAS protocol used for 6 weeks on first-case, in-hospital CABG patients.
- **Monitoring:** Ongoing tracking of patient and staff compliance; real-time issue resolution during the intervention period.

Study of Intervention

- **Design:** Retrospective chart review of first-case in-hospital CABG patients 6 weeks before and during the intervention.
- **Purpose:** Compare pre- and post-intervention outcomes related to length of stay (LOS), bowel motility, and achievement of Step 5 mobility goals.
- **Data Collected:** Age, gender, LOS, prevalence of constipation (defined as >3 days without bowel movement), and time to reach Step 5 activity level.
- **Mobility Measurement:** ICR team tracked feet ambulated and stair performance; Step 5 = walking 600–650 feet in 7–8 mins + 1 flight of stairs + warm-ups.
- **Outcome Metric:** Time (in hours) post-surgery to achieve Step 5 activity level used to assess recovery progress.

Measure

- **Outcomes Measured:**
 - ❖ Hospital length of stay (surgery to discharge)
 - ❖ Prevalence of post-op constipation
 - ❖ Time (in hours) to reach ICR Step 5 activity level
- **Measurement Methods:**
 - ❖ LOS from provider records;
 - ❖ Constipation confirmed via clinical observation and patient reporting
 - ❖ Step 5 mobility tracked by ICR using standardized protocols and patient logs
- **ICR Protocol:** Symptom- and tolerance-based program using heart rate, perceived exertion, and rest; Step 5 = readiness for discharge
- **Data Collection:**
 - ❖ PI collaborated with surgery team to identify inpatient CABG cases
 - ❖ Electronic health records audited for verified outcome timing
 - ❖ De-identified patient data tracked using unique study IDs

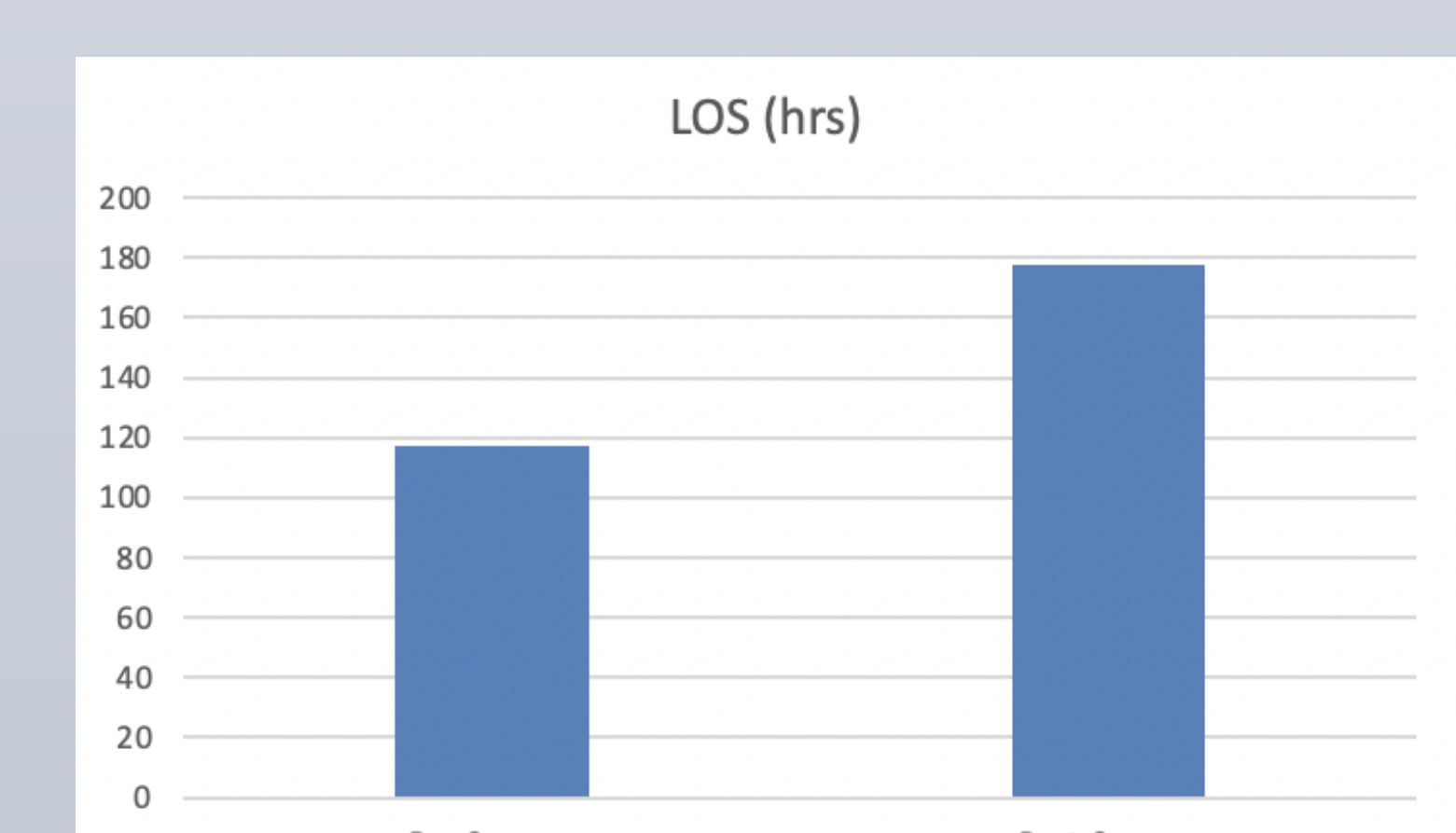
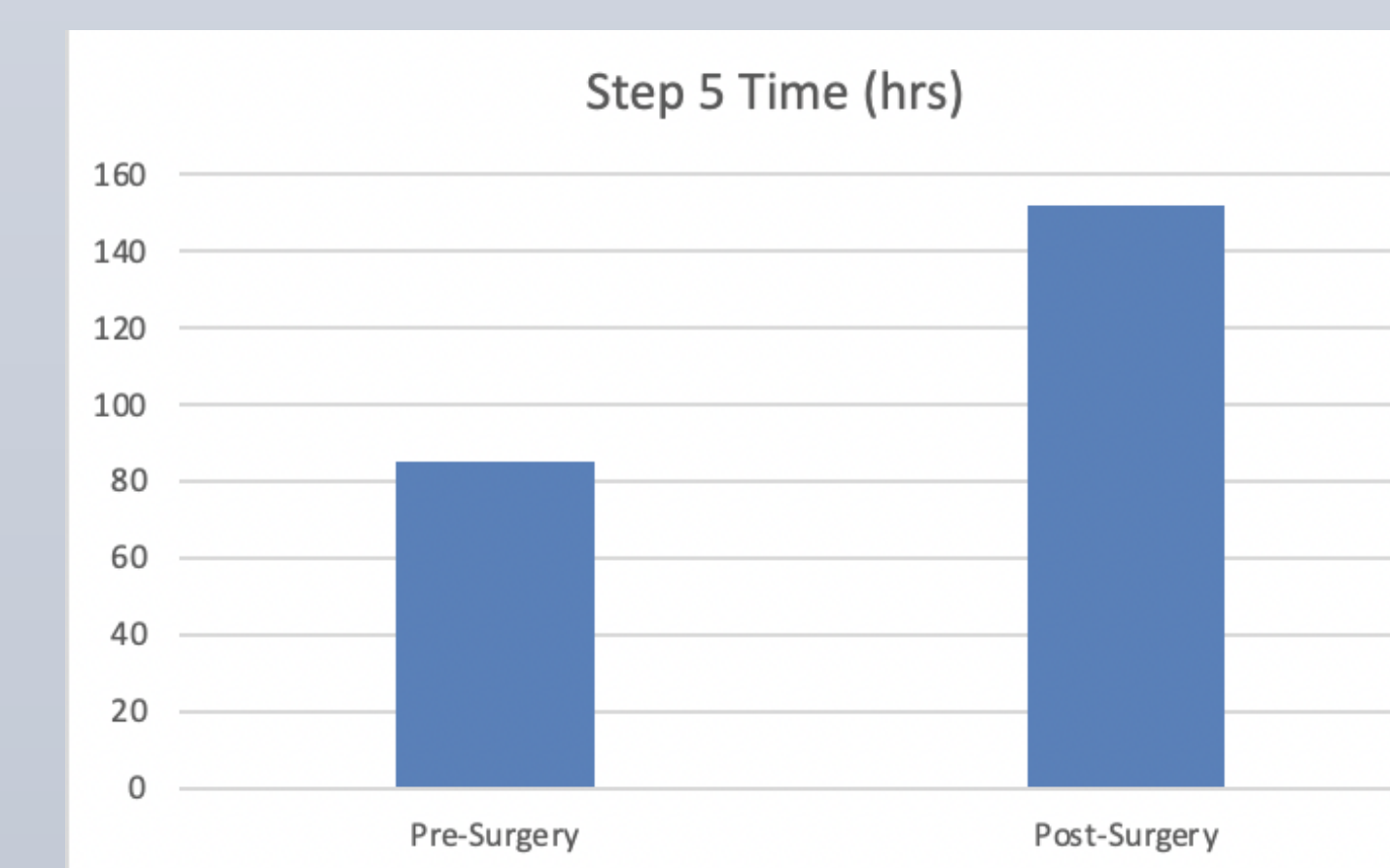
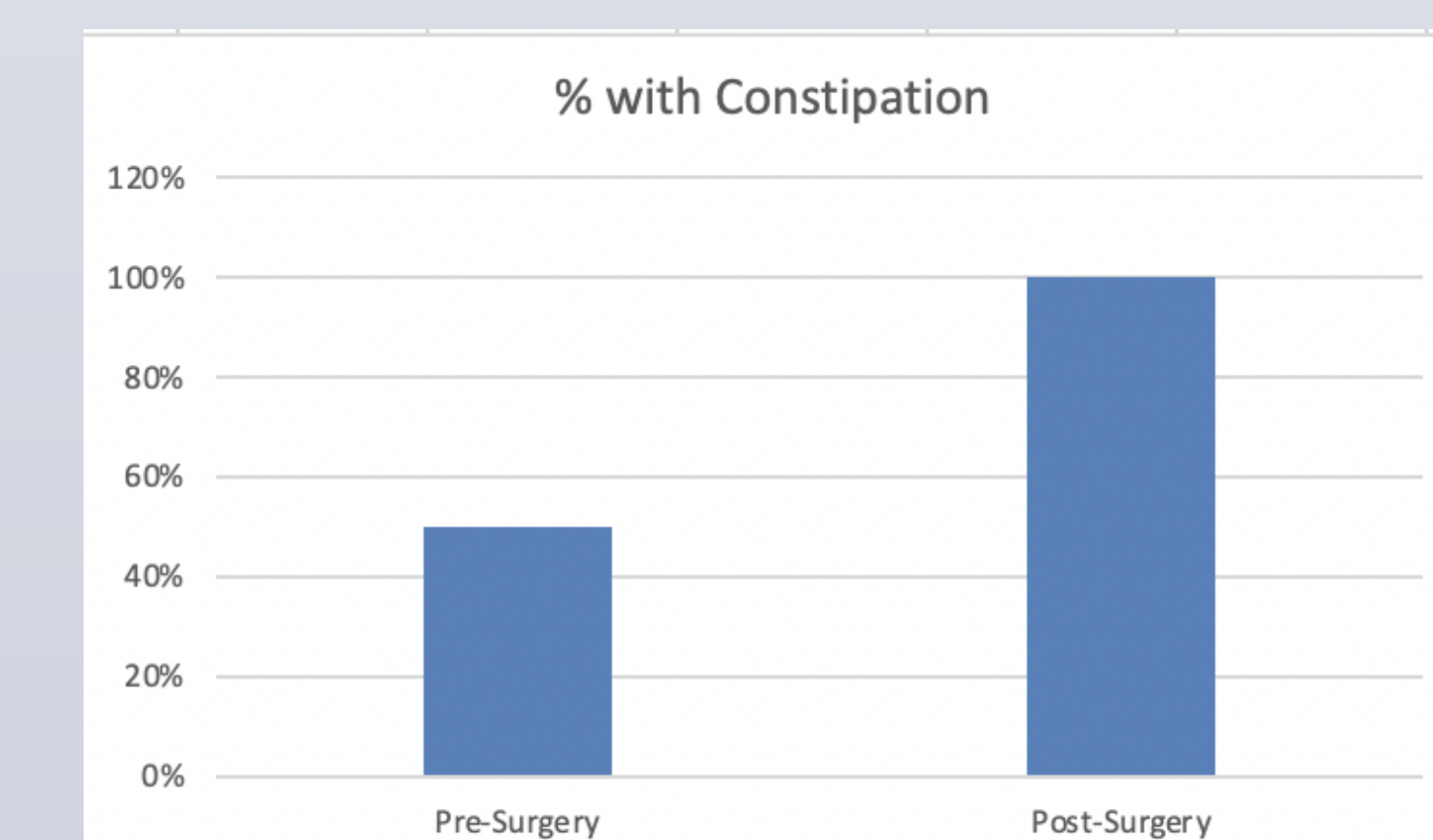
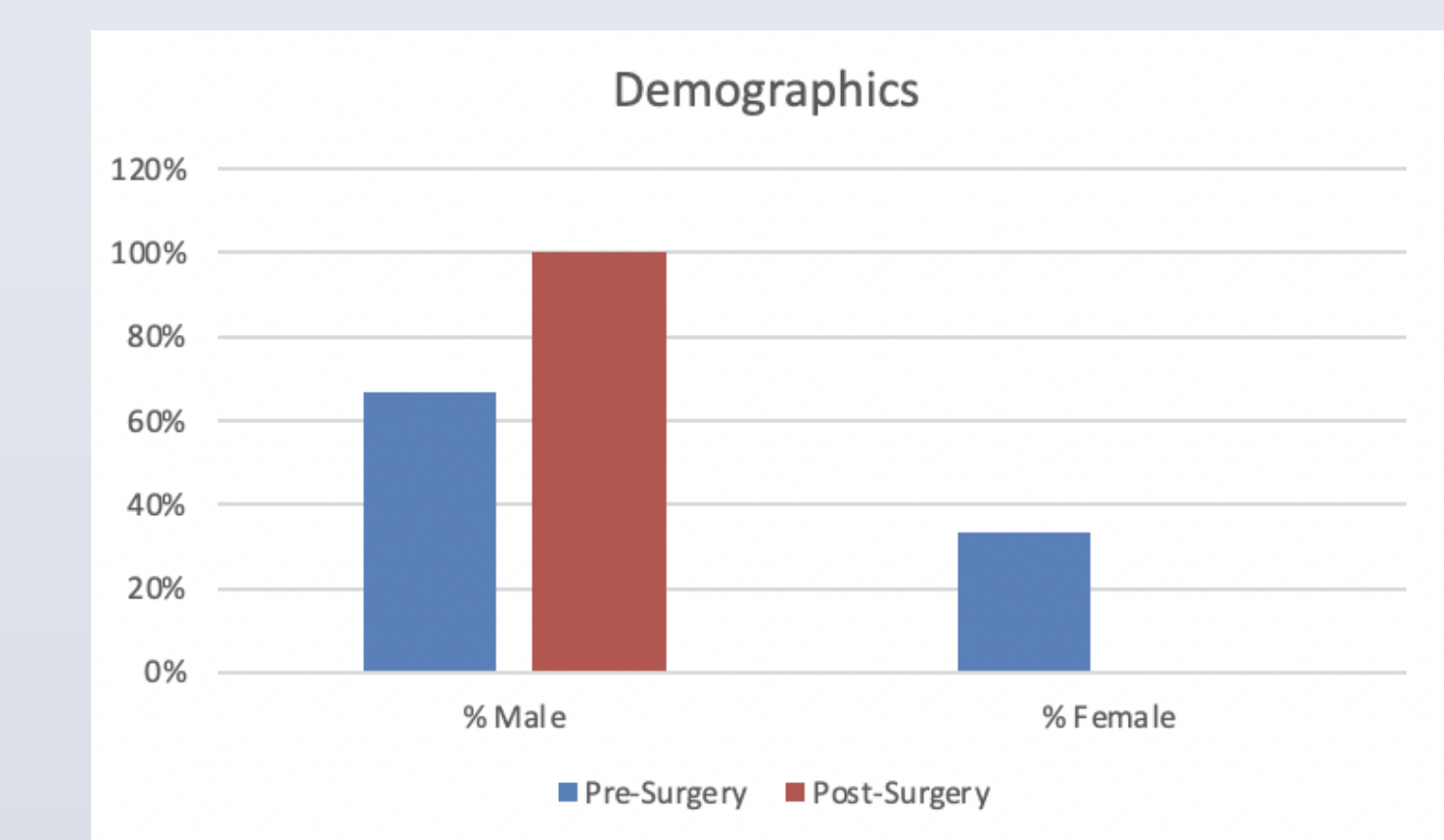
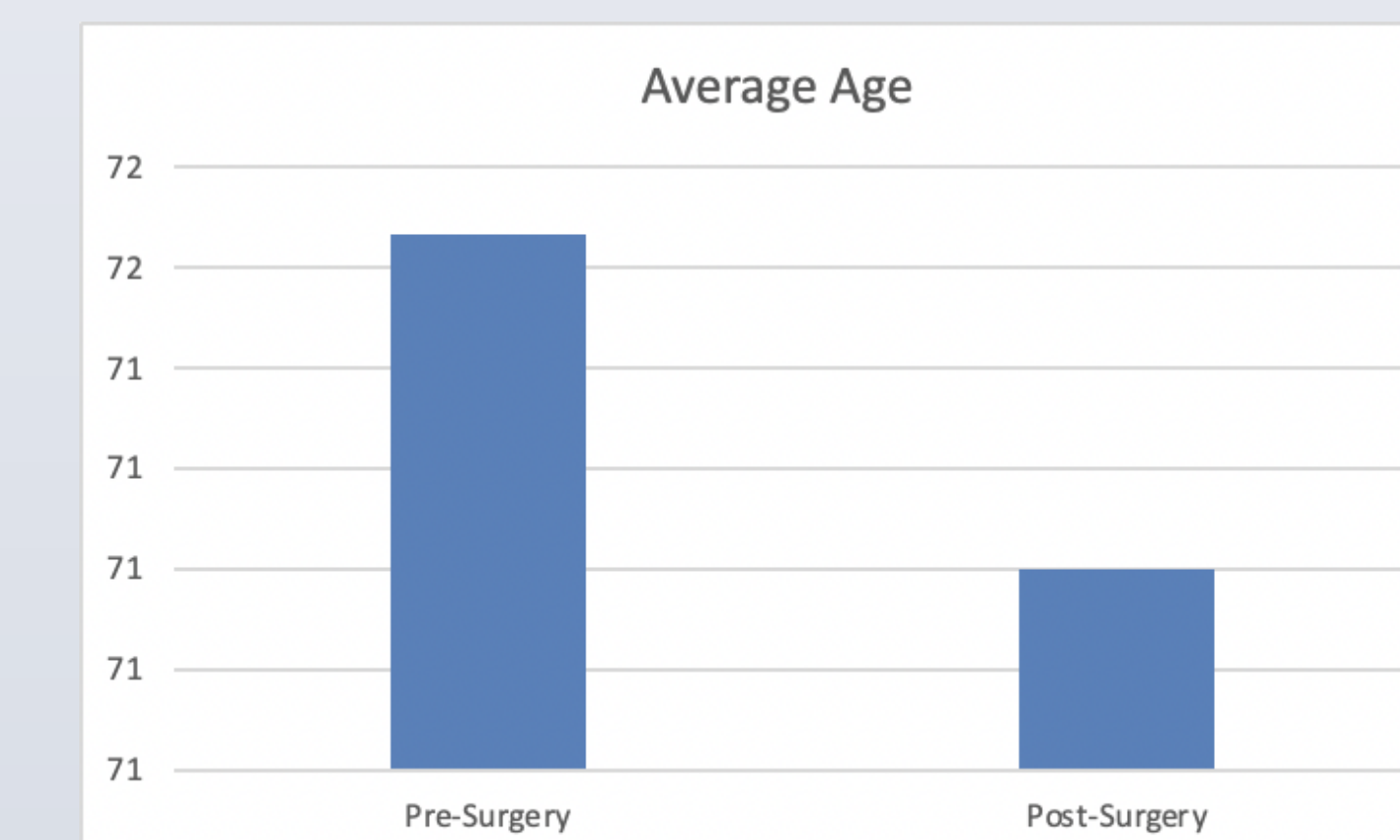


References:

Data Analysis

- Pre-intervention group, $n = 6$, $M = 71.67$ years, 67% male, 33% female
- Post-intervention group, $n = 3$, $M = 71$ years, 100% male, 0% female
- Length of stay: pre-intervention ($M = 117.17$ hours, $SD = 11.94$) vs. post-intervention ($M = 177.50$ hours, $SD = 50.18$).
- Bowel Motility occurrence: pre-intervention group ($M = 0.50$) vs post-intervention group ($M = 0.67$).
- Cardiac Rehab Step 5: the pre-intervention group ($M = 85.17$ hours, $SD = 23.99$) vs post-intervention group ($M = 151.67$ hours, $SD = 37$).

Results



Conclusions

- **Project focus:** Impact of prolonged NPO times on hospital length of stay, bowel motility, and physical mobility (Step 5 achievement).
- **Findings:** No significant improvement in LOS, constipation, or time to reach Step 5.
- **Forward-looking goal:** Establish evidence-based practices to improve patient outcomes and operational efficiency.
- **Potential application:** Extend findings to other in-hospital populations (e.g., ICU or non-surgical patients) affected by prolonged NPO times.