

Factors affecting early ambulation in post-operative patients

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Introduction

- Post-operative pneumonia is the third most common complication for surgical procedures with an incidence ranging from 0.5% to 28% in general surgery and contributes to prolonged hospital stays and increased cost of care.¹
- Early ambulation and mobility are commonly implemented post-operatively and have been shown to decrease medical complications like pneumonia (PNA), deep-vein thrombosis (DVT), and venous thromboembolism (VTE), shorten hospital stay, and improve post-operative functional status.^{2,3}
- Many barriers exist that prevent patients from ambulating right away, the most prevalent being staff shortages, absence of physician orders, and discomfort among both patients and staff.³
- As the number of patients assigned per nurse increases, an environment of heavy workload can lead to decreased prioritization of ambulation. One study found that for 50% of patients, early mobility was not accomplished because of a shortage of staff.^{4,5}
- Pooled analysis has shown that nursing staff can decrease in-hospital mortality by 14%, and higher staff to patient ratios have been associated with lower rates of late onset ventilator associated pneumonia and nosocomial infections.^{4,6}

Hypothesis

Increased nurse staffing levels will be associated with early ambulation, and delayed ambulation contributes to increased incidence of PNA, DVT, and VTE.

Materials and Methods

- Retrospective chart review at a single institution was used to abstract demographic data, time of first ambulation, presence of physician ambulation orders, reasons for delayed ambulation, and development of PNA, DVT or VTE for patients who underwent elective surgery (n=316).
- All statistical analysis was performed using SAS 9.4. Chi-square tests, ANOVA, and two-sample t-tests were performed to assess associations between variables between the populations.

Results

Table 1: Population Characteristics

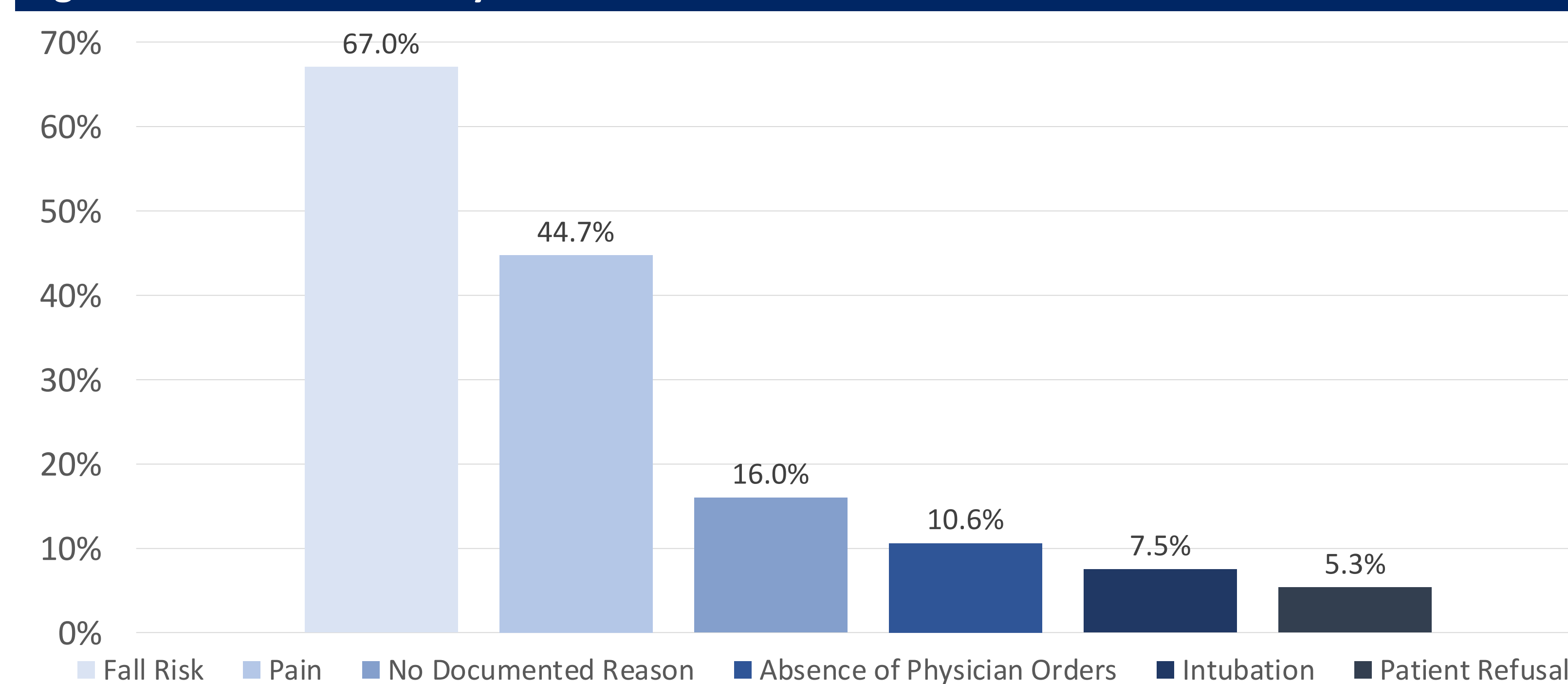
Variable	Early Ambulation (n=222)/70.3%	Delayed Ambulation (n=94)/29.7%	p-value
Age (years)	57.5	59.8	0.2067
Sex (M/F)	126/96	56/38	0.7091
Weight (kg)	92.7	79.7	0.0001
BMI (kg/m ²)	32.4	28.4	0.0014
Patient to nurse ratio	3.9	4.0	0.0651

BMI = body mass index

Figure 1: Primary Outcomes

Outcome	Early Ambulation	Delayed Ambulation
PNA	2	2
DVT	0	0
VTE	1	0

Figure 2: Reasons for Delayed Ambulation



- Location of surgery (abdomen, perineum, chest, neck) and number of procedures was not significantly associated with delays in ambulation.
- There was no significant difference between incidence of PNA, DVT, or VTE between those who ambulated early and those who delayed ambulation.

Conclusions

- Lower patient-to-nurse ratio was not associated with early ambulation.
- Increased weight and BMI were positive predictors of early ambulation, which may be a result of the higher percentage of bariatric surgery patients in the early ambulation group as compared to the delayed ambulation group (15.8% vs 3.2%). Early post-operative ambulation and mobility is prioritized in bariatric surgery patients.
- No conclusion could be made regarding the correlation between early ambulation and post-operative PNA, DVT, and VTE because of the low incidence in both populations.
- The most common reasons for delayed ambulation were found to be fall risk, pain, and lack of physician orders. These factors can all be improved upon with adequate attention in order to encourage earlier ambulation. Absence of documentation regarding the reason for delay in ambulation was also a significant problem.
- A prospective quality improvement study is warranted to further investigate the relationship between barriers to ambulation and post-operative complications.

References

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