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Pilot Analysis of the Risk Factors for 30 Day Readmission in Hip Fracture Patients

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Background

- The Affordable Care Act currently requires hospitals to report 30-day readmission rates for certain medical conditions.[1] It has been suggested that surveillance will expand to include hip and knee surgery-related readmissions in the future.[2] To ensure quality of care and avoid penalties, readmissions related to hip fractures require further investigation. The term hip fracture refers to any fracture of the proximal femur, they are divided into intracapsular, intertrochanteric, and subtrochanteric. [3]
- The financial burden of hip fracture readmissions is significant as hip fractures are the most common orthopedic admitting diagnosis, outside of elective procedures. When hip fracture readmissions were reviewed, it was found that 11.9% were readmitted within 30 days.[4] In the year 2015, the cost of the initial admission averaged \$16,308 and the readmission cost an average of \$14,191. [5] Hip fractures are not only a burdensome financial issue, but they are often a terminal event for the patient. There is a reported 1 year mortality rate of 21.2% for patients with hip fractures. [6]
- There have been studies that looked at the best way to manage these fractures. Operative versus non-operative management of hip fractures have been compared. Patients that undergo operative treatment for hip fractures have a lower 30 day, 1 year, and 2 year mortality than the non-operative patients.[7, 8] This lower mortality rate makes operative management of hip fractures the standard of care. But whenever operative procedures are used, the risk of perioperative complications exists.
- There is literature reporting that there are predictors of readmission based on specific factors in the patient's history. These factors are as follows: pre-existing pulmonary disease, initial hospitalization of 8 days or longer, and discharge to a skilled nursing facility. These three risk factors are evidence based independent risk factors of readmission within 30 days of treatment for a hip fracture. [2, 9]
- LVHN has a pathway for treatment of hip fractures and they have been recording all patients admitted and treated for hip fractures at their facilities for over 2 years. Using the patient database accumulated by LVHN, these evidence based risk factors can be analyzed to improve hip fracture management and decrease readmissions.

Problem Statement

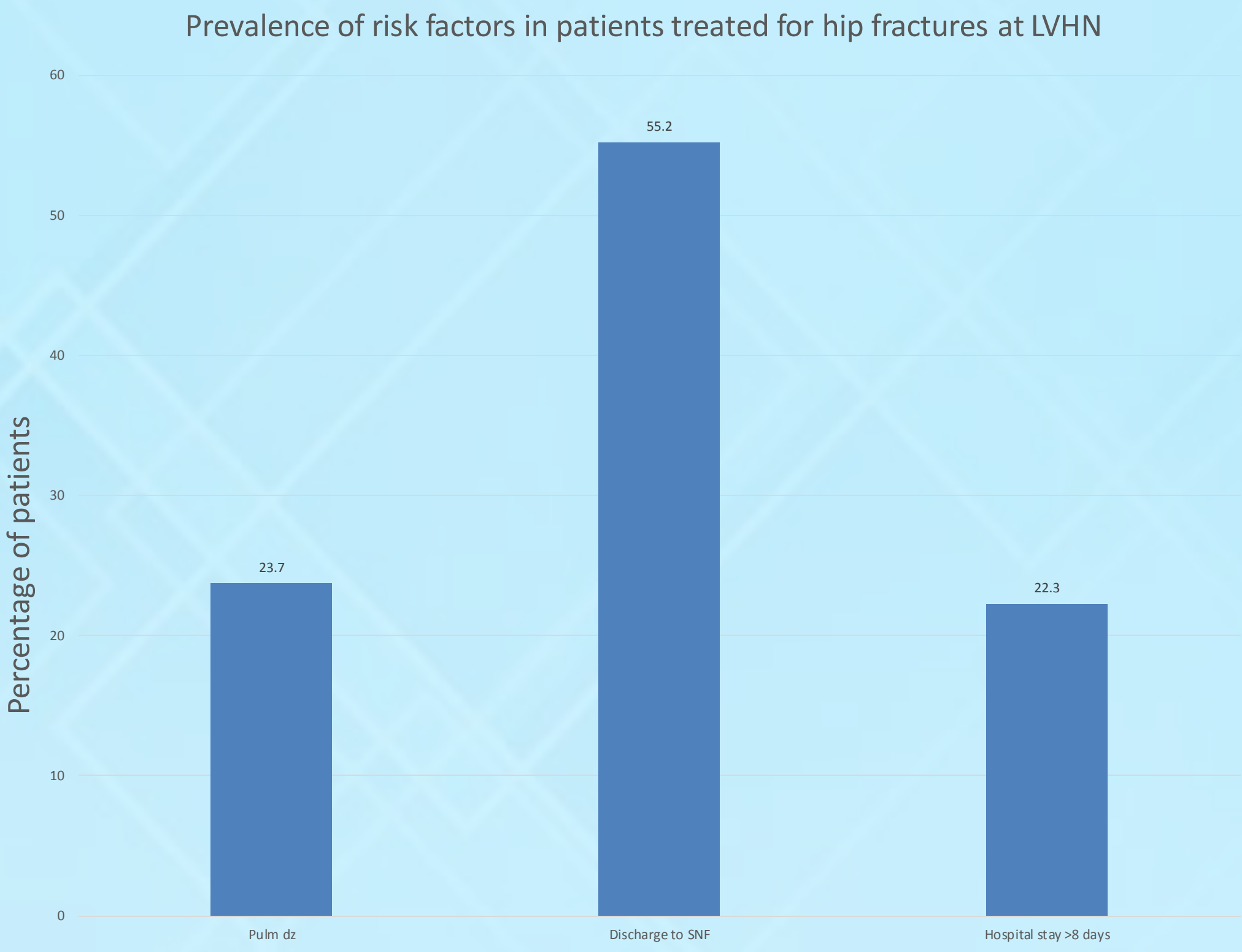
This is a quality improvement project designed to assess for evidence based risk factors for readmission in patients with hip fractures treated at LVHN.

Methods

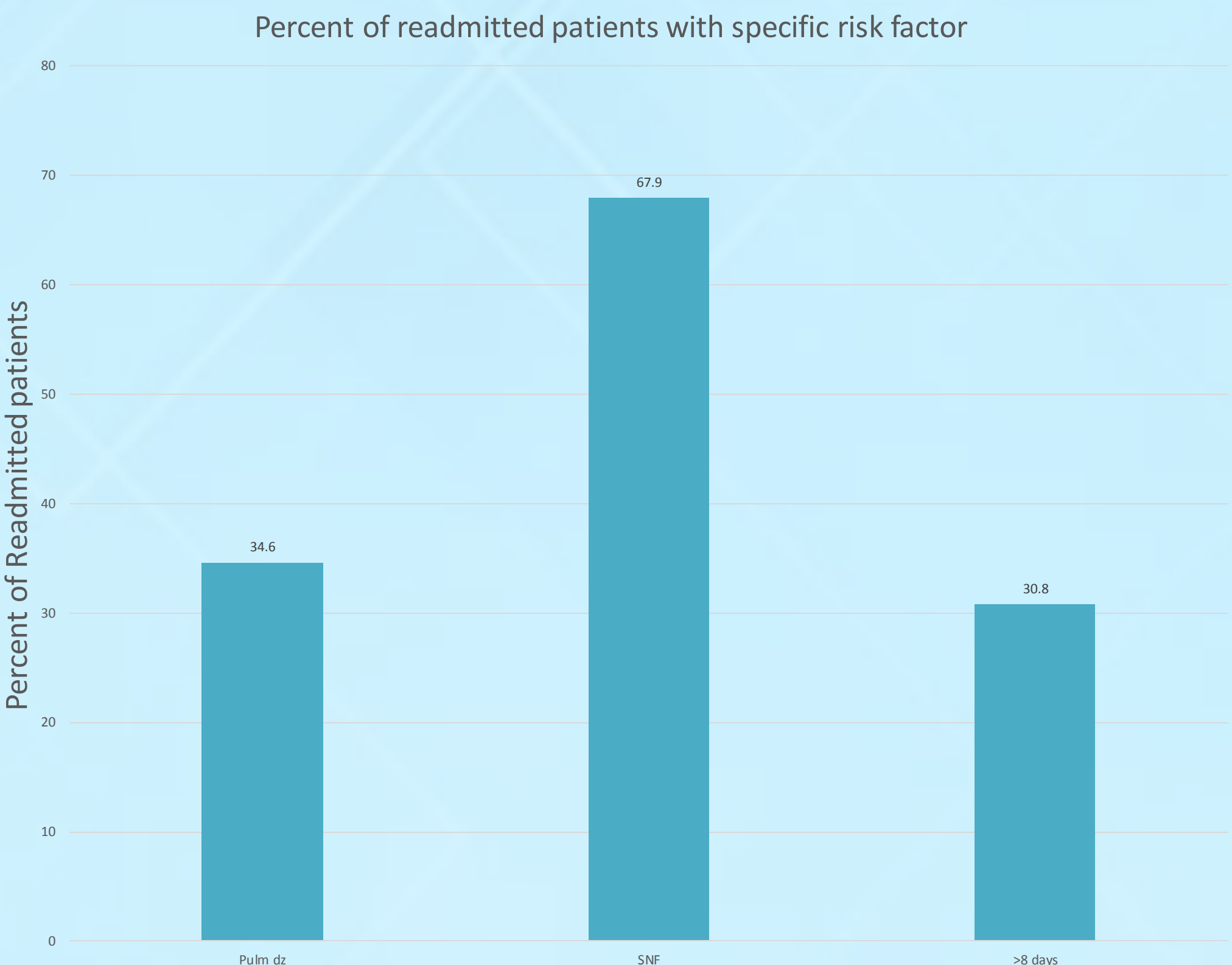
- This was a retrospective chart review of patients admitted and treated for hip fractures at LVHN Cedar Crest from September 2016-August 2018. Patients were included in the review if they had a primary diagnosis of any of the following: displaced or non-displaced proximal femur fractures located intracapsular, intertrochanteric, subtrochanteric, or unspecified fracture of the femoral head or neck. Patients were only included if this was an initial encounter for a closed fracture. Open fractures were excluded.
- Included patient charts were reviewed and the following data points were collected: past medical history of pulmonary disease, length of hospital stay, and location of discharge. Pre-existing pulmonary disease was established by reviewing the patients' problem list on Epic and including the following diagnoses: COPD, pulmonary hypertension, pulmonary fibrosis, asthma, acute respiratory distress, chronic bronchitis, interstitial lung disease, chronic airway obstruction, atelectasis, OSA and chronic respiratory failure. The patients were designated as either having pre-existing pulmonary disease or not. The length of hospital stay was divided into 2 groups, those that stayed greater than or equal to 8 days and those that stayed less than 8 days. When looking at patient discharge, the patients discharge summary was reviewed. Those that were discharged to a skilled nursing facility were separated from those that were discharged to any other location.
- Once the data was collected, the patient population was divided into those who were readmitted to Cedar Crest Hospital within 30 days of treatment. The percentages of the risk factors for the overall patient population and the subsequent group of readmitted patients were calculated. The number of risk factors in the group of readmitted patients was counted. This study was reviewed by the IRB and deemed to be non-human subject research.

Results

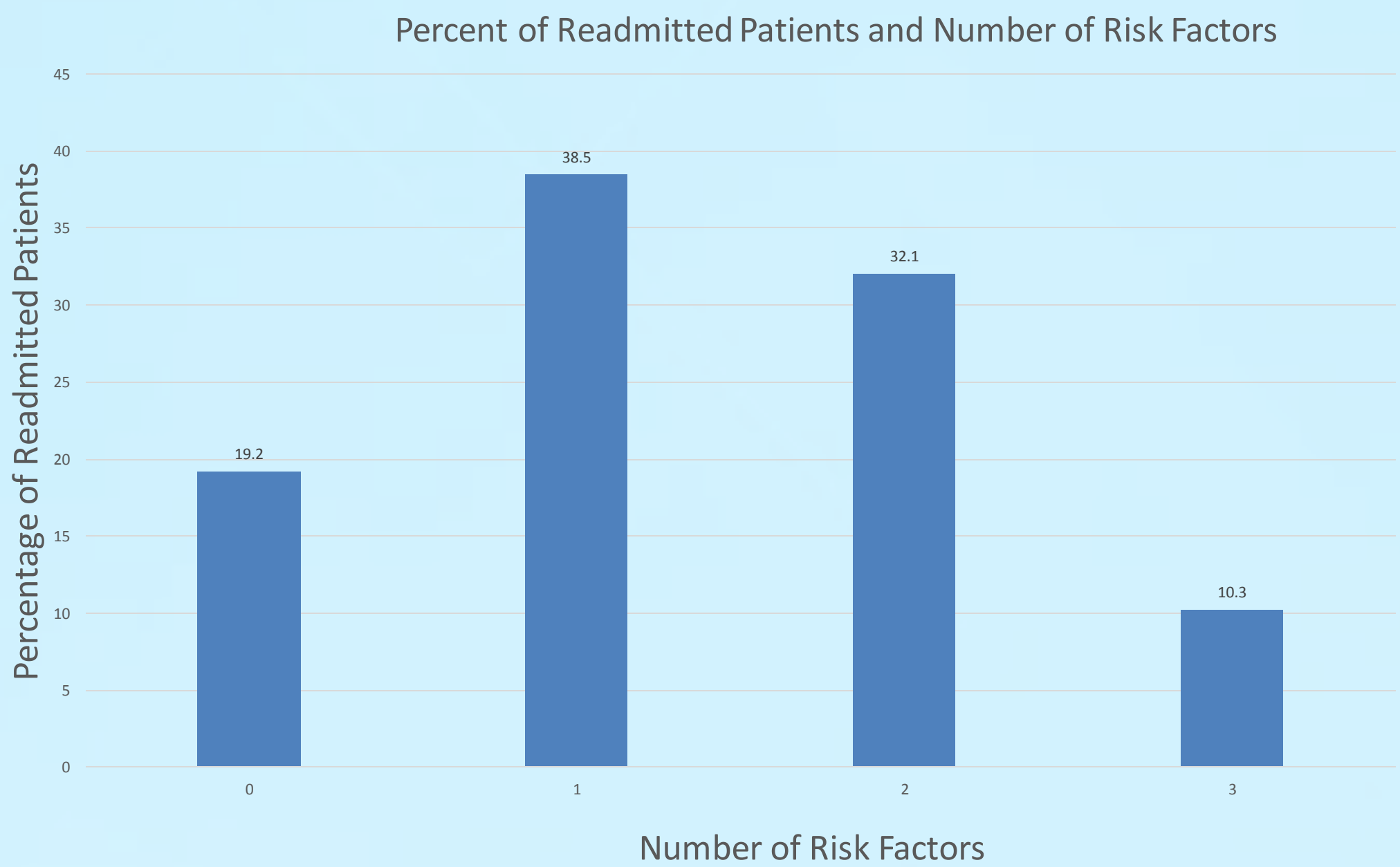
- A total of 641 charts were reviewed looking for pre-existing pulmonary disease, discharge to a skilled nursing facility, and hospital stay for greater than 8 days. Of the 641 patients treated for hip fractures, 78 were re-admitted to the hospital within 30 days. The percentage of risk factors present in all 641 patients treated for hip fractures is presented in Figure 1. The percentage of risk factors present in the 78 patients readmitted within 30 days is presented in Figure 2. The number of risk factors present in the percent of readmitted patients is presented in Figure 3.



- Figure 1: Of the 641 patients treated for hip fractures at LVHN: 23.71% had pre-existing pulmonary disease, 55.23% were discharged to a skilled nursing facility, and 22.31% had a hospital stay >8 days



- Figure 2: 78 patients were readmitted within 30 days of treatment for hip fracture. 34.6% of the readmitted patients had pre-existing pulmonary disease. 67.9% were discharged to a skilled nursing facility. 30.8% had a hospital stay longer than 8 days



- Figure 3: 78 patients readmitted within 30 days of treatment of hip fracture. 19.2% of readmitted patients (15) had zero risk factors. 38.6% of patients (30) had 1 risk factor. 32.1% of patients (25) had 2 risk factors. 10.3% of patients (8) had 3 risk factors. 80.8% of patients admitted within 30 days of being treated for a hip fracture had at least 1 risk factor.

Discussion

General Discussion

The preliminary data collected during this review could provide opportunities for improvement in the way in which hip fracture patients are managed. The literature states that pre-existing pulmonary disease, discharge to a skilled nursing facilities, and a hospital stay greater than 8 days are risk factors that predispose patients to readmission within 30 days of treatment for a hip fracture. Comparing the patients readmitted versus the general hip fracture population, those readmitted had higher percentages of all 3 risk factors. Additionally, 80.8% of all readmitted patients had at least 1 of these risk factors. This should be further analyzed to look for potentially statistically significant differences between the readmitted and non-readmitted groups. Comparisons should be done between risk factors in the readmitted and non-readmitted groups. With more statistical power, changes to hip fracture management could be suggested.

Relationship to SELECT Principles

This project has strong implications in the domain of health systems. Hip fracture readmissions, on average, double the total cost of care. This financial burden could potentially be exacerbated with changes to reimbursement that limits compensation on readmitted patients.

Limitations

This study, like all others, has its limitations in both design and results. Although literature supports the claim that discharge to a skilled nursing facility is an independent risk factor for readmission after a hip fracture, this parameter is vague. There has also been studies looking at the variety of care patients received at a skilled nursing facilities. The intensity of rehabilitation post hip fractures at skilled nursing facilities varies greatly, especially in the first 8 therapy days. [10] There have also been proposed racial discrepancies in what patients are discharged to skilled nursing facilities versus inpatient rehab facilities. [11] These confounders make the variable of "discharge to skilled nursing facility" difficult to qualify.

Conclusions

- The results found in this study demonstrate that patients with a high likelihood of readmission can be identified during the initial encounter. Early identification of high readmission risk patients can alter management of these patients to decrease readmission. This would decrease financial burden and improve patient outcomes

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