INPLASY PROTOCOL

To cite: Zhou et al. Predictors of pressure injury in patients with hip fracture:a meta-analysis. Inplasy protocol 202250028. doi: 10.37766/inplasy2022.5.0028

Received: 05 May 2022

Published: 05 May 2022

Corresponding author:
Lin Han

lzu-hanlin@hotmail.com

Author Affiliation:
School of Nursing, Lanzhou University.

Support: **20JR10RA637, 21JR7RA638.**

Review Stage at time of this submission: **Data analysis - completed but not published.**

Conflicts of interest:
None declared.

Predictors of pressure injury in patients with hip fracture: a meta-analysis

Zhou, YJ[1]; Wang, Q[2]; Lv, L[3]; Zhang, HY[4]; She, DL[5]; Ge, L[6]; Han, L[7].

Review question / Objective: **The purpose of this study was to investigate the predictors of pressure injury in patients with hip fracture in order to provide a reference for clinical practice.**
Condition being studied: **Hip fracture has become a major public health issue of common concern in both developed and developing countries. and its incidence is estimated to rise to 6.26 million by 2050. Hip fracture patients are prone to various complications during treatment and rehabilitation, and pressure injury (PI) is one of the common complications of hip fracture. Studies have reported that the incidence of pressure injury in patients with hip fracture is 3.4%-59.8%. In addition, pressure injury may occur at any time when patients with hip fracture are hospitalized, which not only greatly aggregates the pain of patients, but also increases the difficulty of treatment and nursing, and seriously threatens the safety of patients. Clarifying the influencing factors of pressure injury after hip fracture will help medical staff quickly identify high-risk patients and strengthen preventive measures. However, previous studies have only discussed the influence of individual factors on the occurrence of pressure injury in patients with hip fracture from the perspectives of diabetes and early surgery, and there is still a lack of systematic analysis on the influencing factors of pressure injury in patients with hip fracture.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 May 2022 and was last updated on 05 May 2022 (registration number INPLASY202250028).

INTRODUCTION

Review question / Objective: **The purpose of this study was to investigate the predictors of pressure injury in patients with hip fracture in order to provide a reference for clinical practice.**

Condition being studied: **Hip fracture has become a major public health issue of**

common concern in both developed and developing countries. and its incidence is estimated to rise to 6.26 million by 2050. Hip fracture patients are prone to various complications during treatment and rehabilitation, and pressure injury (PI) is one of the common complications of hip fracture. Studies have reported that the incidence of pressure injury in patients with hip fracture is 3.4%-59.8%. In addition, pressure injury may occur at any time when patients with hip fracture are hospitalized, which not only greatly aggregates the pain of patients, but also increases the difficulty of treatment and nursing, and seriously threatens the safety of patients. Clarifying the influencing factors of pressure injury after hip fracture will help medical staff quickly identify high-risk patients and strengthen preventive measures. However, previous studies have only discussed the influence of individual factors on the occurrence of pressure injury in patients with hip fracture from the perspectives of diabetes and early surgery, and there is still a lack of systematic analysis on the influencing factors of pressure injury in patients with hip fracture.

METHODS

Search strategy: PubMed: ((((((((((((((((Pressure Ulcer[MeSH Terms]) OR (pressure ulcer[Title/Abstract])) OR (pressure ulcers[Title/Abstract])) OR (ulcer pressure[Title/Abstract])) OR (ulcers pressure[Title/Abstract])) OR (Bedsore[Title/Abstract])) OR (Bedsores[Title/Abstract])) OR (pressure sore[Title/Abstract])) OR (pressure sores[Title/Abstract])) OR (sore pressure[Title/Abstract])) OR (sores pressure[Title/Abstract])) OR (bed sores[Title/Abstract])) OR (bed sore[Title/Abstract])) OR (sore bed[Title/Abstract])) OR (sores bed[Title/Abstract])) OR (decubitus ulcer[Title/Abstract])) OR (decubitus ulcers[Title/Abstract])) OR (ulcer decubitus[Title/Abstract])) OR (ulcers decubitus[Title/Abstract]) AND ((((((((((((((((fractures, bone[MeSH Terms]) OR (fractures bone[Title/Abstract])) OR (broken bones[Title/Abstract])) OR (bone broken[Title/Abstract])) OR (bones broken[Title/Abstract])) OR (broken bone[Title/Abstract])) OR (bone fractures[Title/Abstract])) OR (bone fracture[Title/Abstract])) OR (bone fracture[Title/Abstract])) OR (spiral fractures[Title/Abstract])) OR (fracture spiral[Title/Abstract])) OR (fractures spiral[Title/Abstract])) OR (spiral fracture[Title/Abstract])) OR (torsion fractures[Title/Abstract])) OR (fracture torsion[Title/Abstract])) OR (fractures torsion[Title/Abstract])) OR (torsion fracture[Title/Abstract]).

Participant or population: Patients with hip fracture.

Intervention: Pressure Injury.

Comparator: None(single-arm study).

Study designs to be included: Randomized controlled studies and observational studies (cohort studies, case-control studies, and cross-sectional surveys).

Eligibility criteria: Studies included in this meta-analysis must meet the following criteria:(1) Research subjects: patients with hip fracture. (2) Outcome measures: predicted risk factors and quantitative outcomes (statistical data such as risk ratio (RR), odds ratio (OR), or hazard ratio (HR) and 95% confidence interval (95%CI) was included in the article). (3) Research types: randomized controlled studies and observational studies (cohort studies, case-control studies, and cross-sectional surveys). The language was limited to English.

Information sources: PubMed, Embase, Web of Science, and the Cochrane Library databases.

Main outcome(s): All kinds of related predictors include individual factors(Age, gender, race, medical comorbidities, Charlson Comorbidity Index, hemoglobin, serum albumin, body Mass Index, braden scale score, admission Norton scale score≤14 points, Activity of Daily Living, Numerical rating scale≥4 points, Mini-mental State Examination scale),

operation-related factors(Types of surgery, non-surgical treatment, general anesthesia, regional anesthesia, time to surgery, duration of surgery), Care factors(Length of hospital stay, nursing home/Institution, percentage of days with caregivers, percentage of days with catheter, urinary tract infection and diaper use, percentage of days with a foam valve under treated limb, pressure redistribution mattresses, daily preoperative positioning, postoperative positioning and Mixed nutritional supplements).

Data management: Data extraction was performed independently by two researchers using pre-defined spreadsheets. The following data were extracted and recorded: name of the first author, year and country of publication, type of study design (RCT/ cross-sectional/ case-control/cohort), number of participants, age, gender, evaluation of influencing factors, and follow-up time, etc.

Quality assessment / Risk of bias analysis: The two authors independently used the Newcastle-Ottawa Scale(NOS) to evaluate the methodological quality of eligible cohort studies and case-control studies, which included 8 items divided into three dimensions of selection (4 items), comparability (1 item) and exposure (3 items). The quality score of NOS ranges between 0 and 9. Studies with a score of 7 or more were rated as high quality, while studies with a score of 5 or less were rated as low quality. The risk of bias in the randomized controlled studies was evaluated according to the risk of bias assessment tool provided by Cochrane Reviewer's Handbook. The Cochrane's risk of bias assessment tool mainly evaluates the risk of bias with 7 items from 6 aspects including selection, implementation, measurement, follow-up, reporting and other bias. The judgment results of "low risk of bias", "high risk of bias" and "unclear" were made for each item according to the risk of bias assessment criteria. Once there were different results, the final decision was reached based on the consensus after the two sides have resolved the differences. If the two sides still have disputes, a third reviewer would be invited to participate to discuss and decide. Publication bias was evaluated by funnel plot and quantitative identification of Egger's test, with $P<0.05$ considered significant bias.

Strategy of data synthesis: The software Stata 15.0 was used for data analysis, and the fixed-effect or random-effect model was adopted. For the dichotomous data, 95% confidence interval (CI) and odds ratio (OR) was used to evaluate the overall effect and statistical heterogeneity, and the continuous data was described by standardized mean difference (SMD) and 95% CI. When the combined effect result showed OR>1 or SMD>0, it proved that the indicator variable was a high-risk factor; if OR<1 or SMD<0, it was a protective factor. The overall effect of $P<0.05$ was considered statistically significant. Cochrane statistical data of I2 was used to evaluate heterogeneity, and P 50% was considered statistically significant heterogeneity. When heterogeneity existed, the random-effect model was used to analyze the data and sensitivity analysis was conducted; otherwise, the fixed-effect model was used. For the sensitivity analysis, two methods of comparing using different effect models and investigating the influence of a single study on the combined total effect size were adopted to test the stability of results. If the conclusions were consistent, the results were stable; otherwise, the results were unstable.

Subgroup analysis: If high heterogeneity and data permits, we will conduct subgroup analysis to determine the source of heterogeneity.

Sensitivity analysis: Sensitivity analysis was further conducted for the results with high heterogeneity, and the studies with great influence on heterogeneity were excluded, which will be performed by excluding tests one by one and observing whether there is a significant change in the synthesis results.

Language: English.

Country(ies) involved: China-Author country.

Keywords: Hip fracture; Pressure injury; Predictors; Meta-analysis.

Contributions of each author:

Author 1 - Yujun Zhou - Author 1 contributed to the study design, data coordination and article writing.
Email: zhouyj2019@lzu.edu.cn
Author 2 - Qing Wang - Author 2 contributed to the data extraction and analysis.
Email: wangqing@lzu.edu.cn
Author 3 - Lin Lv - Author 3 assisted with the data extraction and analysis.
Email: lvlin881125@163.com
Author 4 - Hongyan Zhang - Author 4 contributed to the study selection and quality assessment.
Email: zhanghy200604@163.com
Author 5 - Dongli She - Author 5 assisted with the study selection and quality assessment.
Email: 1027354509@qq.com
Author 6 - Long Ge - Author 6 was involved as the third reviewer to solve disagreement when necessary.
Email: gelong2009@163.com
Author 7 - Lin Han - Author 7 provided advice and made the final decision. All authors read and approved the final manuscript.
Email: lzu-hanlin@hotmail.com