



臺北市立萬芳醫院 - 委託臺北醫學大學辦理

Taipei Municipal Wanfang Hospital (Managed by Taipei Medical University)

ERAS的介入 可以減輕髖部骨折病人的術後疼痛？

Effect of Enhanced Recovery After Surgery on the Prognosis
of Patients With Hip Fractures: A Systematic Review and Meta-Analysis

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單位：7A

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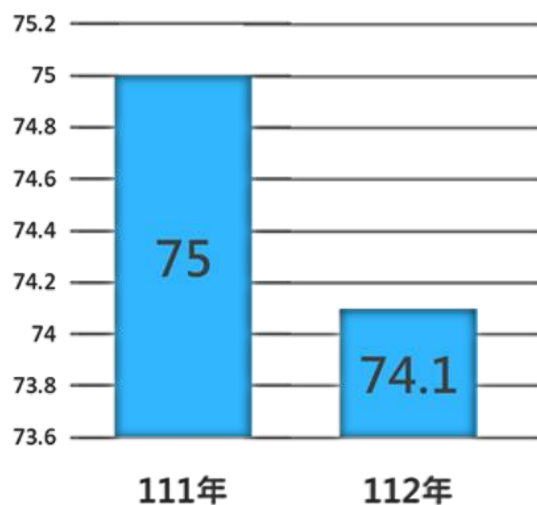
研究背景、動機

- ◆ 髖部骨折是一種使老年人衰弱的疾病，也是老年患者死亡的重要原因，老年人髖部骨折後一年死亡率高達8.4%~36%。
- ◆ 根據資料統計台灣的髖部骨折人數預計將從 2010 年的 18,338 人增加到 2035 年的 50,421 人，增加 2.7 倍，其中女性占多數。
- ◆ 髖部骨折老年人的慢性疾病以及骨折或手術併發症引起的合併症導致住院時間延長、生活品質下降、再入院率增加，甚至死亡率和醫療費用增加。

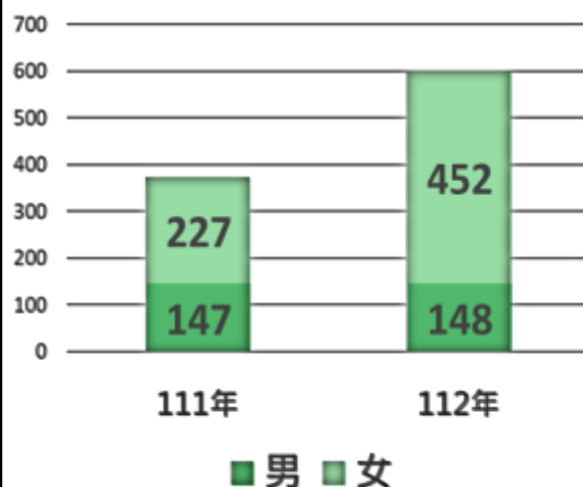


統計111年與112年因髖部骨折入院手術的患者，如下表。

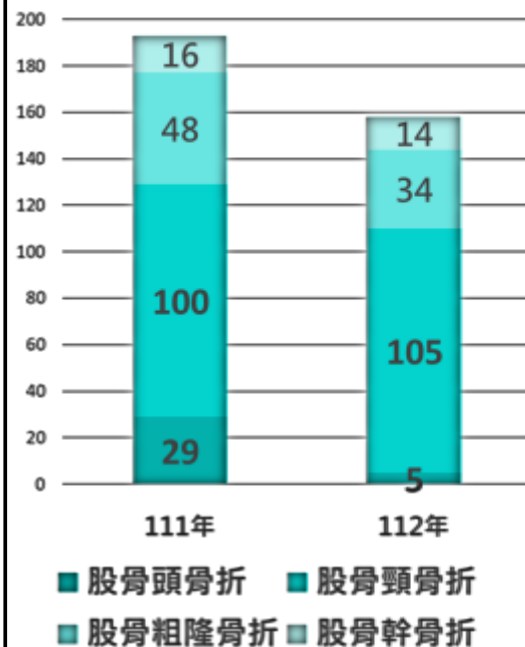
平均年齡



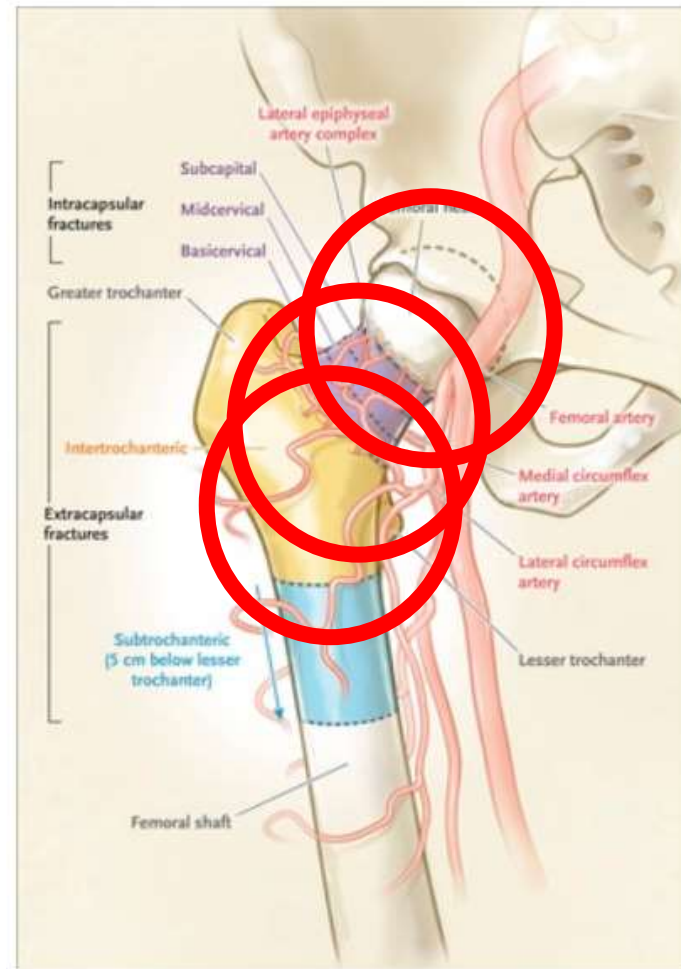
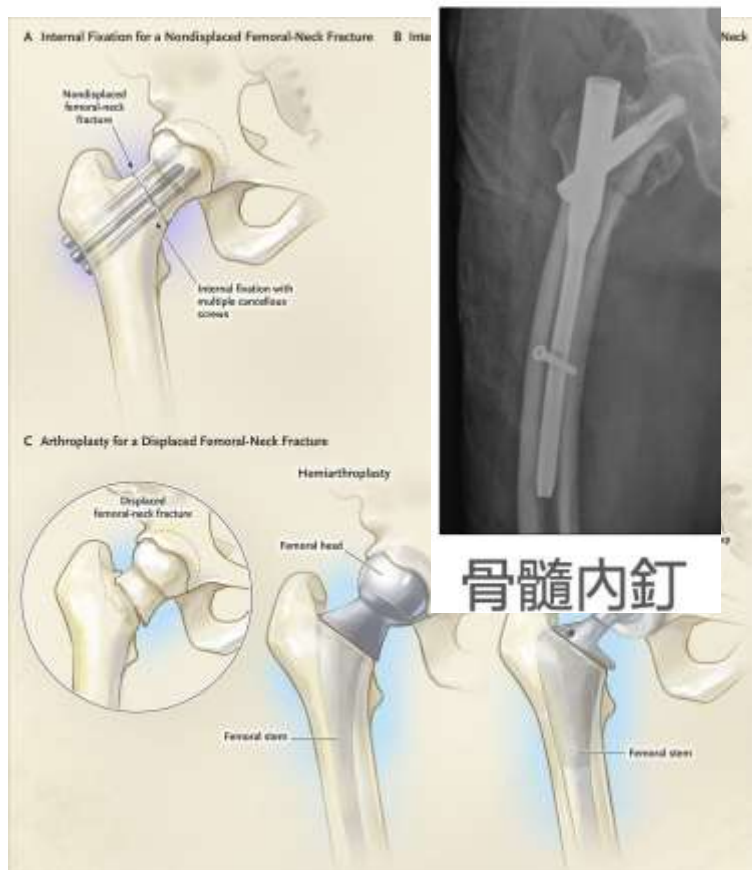
性別



骨折部位



研究背景、動機



研究背景、動機

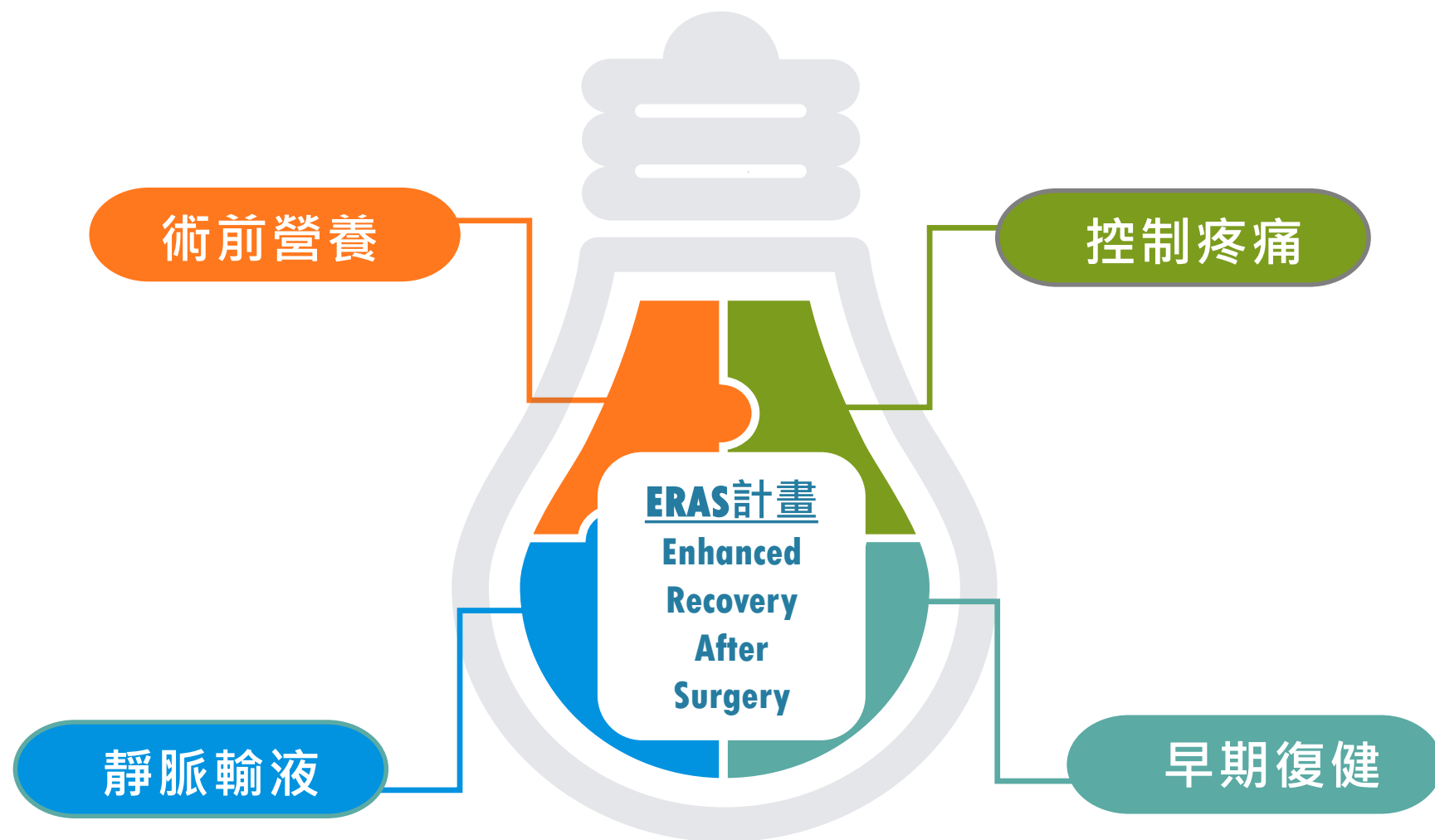
適當的復建介入，已被證實能有效減緩髋部骨折患者術後不適與加速功能之恢復，考量失能對年長者預後的不良影響，如何改善年長患者於關節置換後，儘速回復行走功能，將是現今臨床工作者必須重視方向。

目前單位ERAS介入的有哪些？

-TKA、THR患者



研究背景、動機



PICO

研究族群／問題 (Population/ Problem) :

- Hip fracture Patients

介入措施 (Intervention) :

- ERAS

比較 (Comparison) :

- Routine/usual care

結果 (Outcomes) :

- pain 、 Pain control



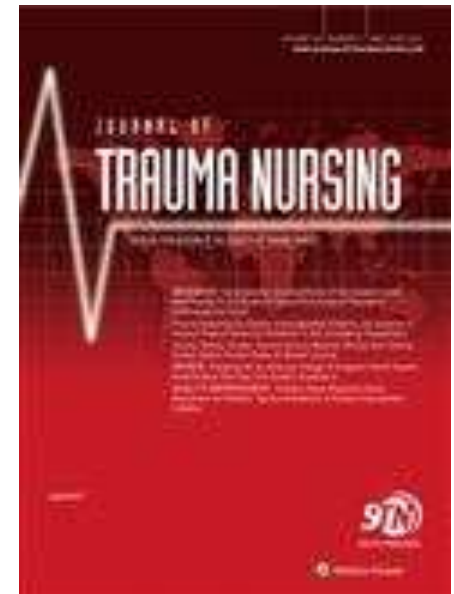
Effect of Enhanced Recovery After Surgery on the Prognosis of Patients With Hip Fractures: A Systematic Review and Meta-Analysis

Ruiqi Zhu  ■ Fengqiao Yang  ■ Caiying Li  ■ Hongxia Zhu  ■ Lu Lin, PhD  ■ Xin Zhao, PhD 

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IF 1.0



簡述文獻

- 利用系統性回顧、綜合分析的方式探討術後ERAS的介入對於髌部骨折手術患者的影響。
- 藉由Embase、PubMed、Web of Science、CINAHL、Cochrane、Ovid platform、Scopus、PsycINFO、ClinicalTrials.gov和China National Knowledge Infrastructure (CNKI) 資料庫搜尋文獻。
- 通過Newcastle-Ottawa Scale (NOS) 量表評讀工具執行評讀。
- 搜尋年代區間：資料庫建置至2022/01/15。
- 僅限英文呈現



系統性文獻回顧探討的問題(PICO)

研究族群／問題 (Population/ Problem)：

- Elderly patients with hip fractures

介入措施 (Intervention)：

- ERAS programs

比較 (Comparison)：

- Traditional perioperative care

結果 (Outcomes)：

- One-year mortality,
- readmission rate,
- HHS,
- postoperative pain score,
- LOS,
- incidence of postoperative complications

Harris Hip Score 評分表

- 疼痛程度
- 跛行程度
- 輔助程度
- 行走距離
- 就坐舒適程度
- 可否搭乘交通工具
- 上下樓梯功能評估
- 畸形程度

- 活動範圍
- 肌肉張力評估

211° - 300°	5
161° - 210°	4
101° - 160°	3
61° - 100	2
31° - 60°	1
0° - 30°	0

分數評分參考	
90-100	優等
80-89	良好
70-79	尚可
<70	差



Appraisal sheets(FAITH)

- F-Find(研究是否找到所有的相關證據?)
- A-Appraisal(文獻是否經過嚴格評讀?)
- I-Included(是否只納入具良好效度的文章?)
- T-Total up(作者是否以表格和圖表「總結」試驗結果?)
- H-Heterogeneity(試驗的結果是否相近-異質性?)

FAITH-研究是否找到所有的相關證據

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METHODS

Search Strategy

We performed a systematic review of related literature in accordance with the Preferred Reporting Items for Systematic Review and Meta-analysis guidelines (Page et al., 2021). To enhance the comprehensiveness and systematic nature of our search strategy, we conducted searches on various databases, including Embase, PubMed, Web of Science, CINAHL, Cochrane libraries, from database inception to July 15, 2022, with the language limited to English. In addition, we searched MEDLINE via the Ovid platform, Scopus, PsycINFO, ClinicalTrials.gov, and China National Knowledge Infrastructure (CNKI), among others. The search limits and conditions of each database were adjusted to ensure the accuracy and consistency of the search results. Figure 1 contains the string used for the initial search. Reference lists of related articles were also searched manually. In our team, each author independently reviews all retrieved article titles and

良好的文獻搜尋至少應包括二個主要的資料庫(如:Medline,Cochrane考科藍實證醫學資料庫,EMBASE等)。

並且加上文獻引用檢索(參考文獻中相關研究、Web of Science,Scopus 或 Google Scholar)、試驗登錄資料等。

文獻搜尋應不只限於英文,並且應同時使用MeSH字串及一般檢索詞彙(text words)。

使用的資料庫



FAITH-研究是否找到所有的相關證據

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搜尋詞彙
(搜尋策略)

```
("Hip Fractures"[MeSH] OR "hip fracture"[tiab] OR "fracture of hip"[tiab]) AND  
("Enhanced Recovery After Surgery"[MeSH] OR "ERAS"[tiab] OR "fast-track  
surgery"[tiab] OR "accelerated recovery"[tiab]) AND ("Perioperative Care"[MeSH]  
OR "traditional care"[tiab] OR "usual care"[tiab]) AND ("Mortality"[MeSH] OR  
"readmission"[tiab] OR "Harris Hip Score"[tiab] OR "pain score"[tiab] OR "length of  
stay"[tiab] OR "postoperative complications"[tiab]) AND ("Aged"[MeSH] OR  
"elderly"[tiab] OR "older adults"[tiab]) AND ("Humans"[MeSH])
```

Figure 1. Search string with MeSH terms.

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Study Selection

According to the inclusion and exclusion criteria mentioned earlier, the study selection process was conducted independently by two reviewers (Z. R. Q. and Y. F. Q.), including screening titles, abstracts, and full texts.

Data Extraction

The two reviewers independently extracted data from the eligible studies, and any disagreement was discussed with a third reviewer to reach a consensus. The data extracted from the literature were as follows: first author, publication year, country, age, sex, study design, sample size, type of fractures, and outcome measures. The longest follow-up data on outcome measures of each study were extracted.

評讀結果：

☐ 是

☐ 否

☐ 不清楚



PRISMA

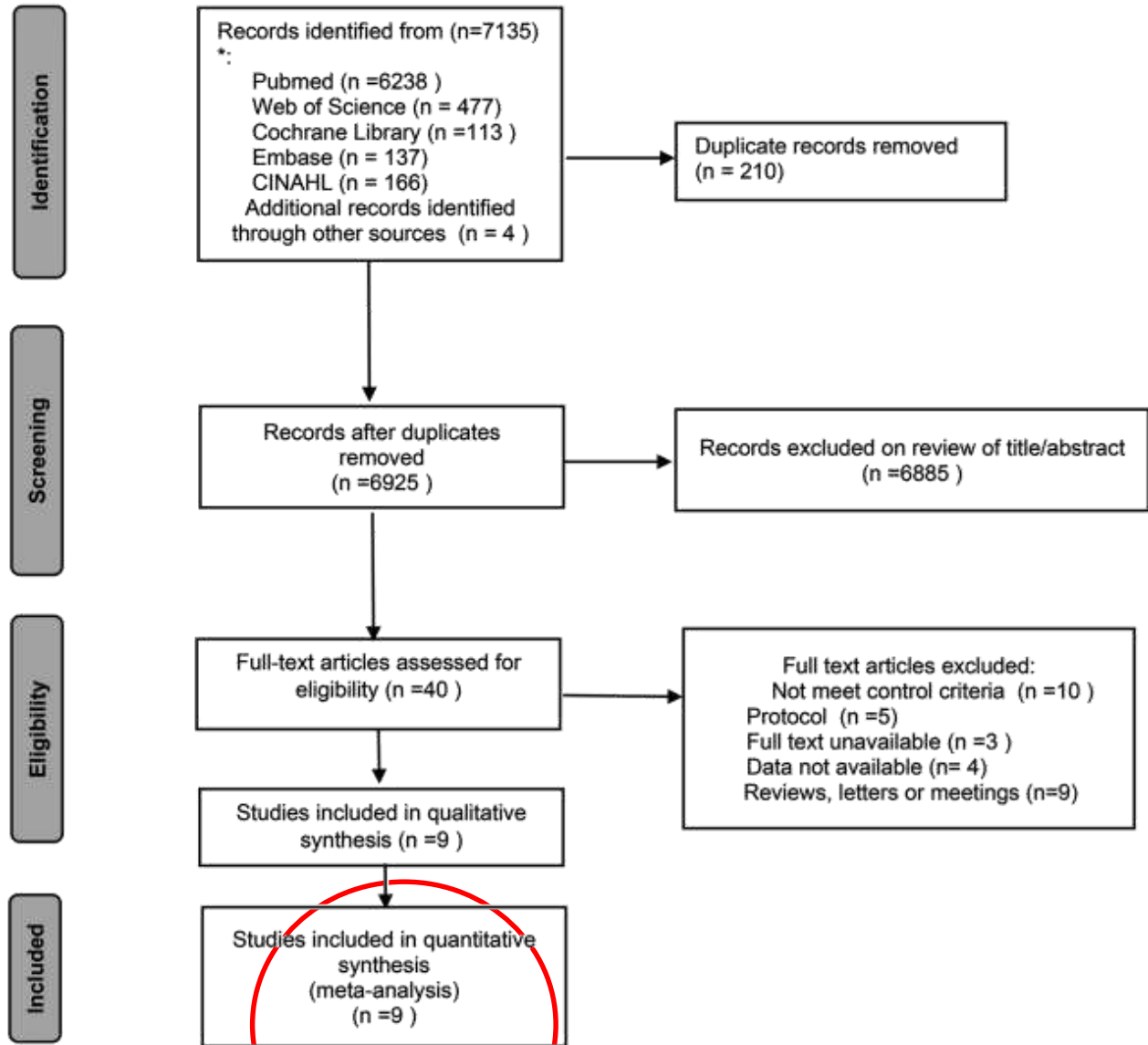
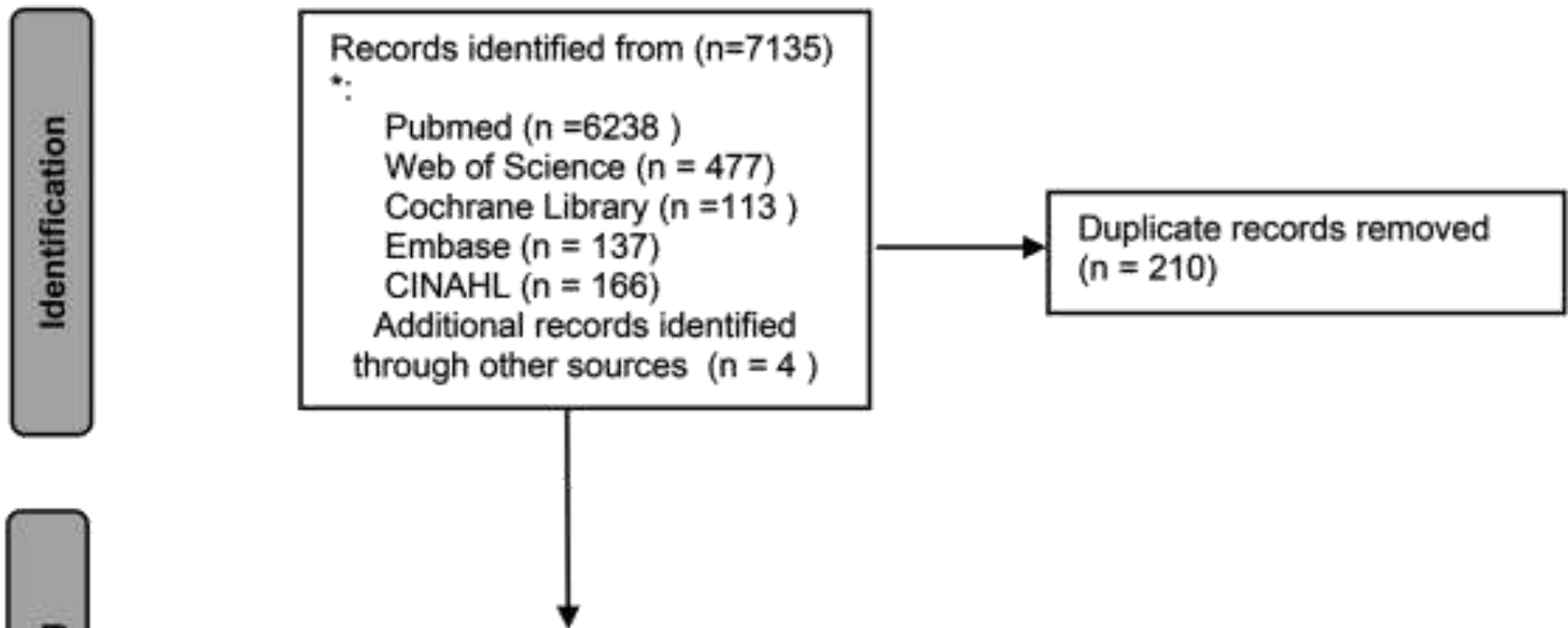


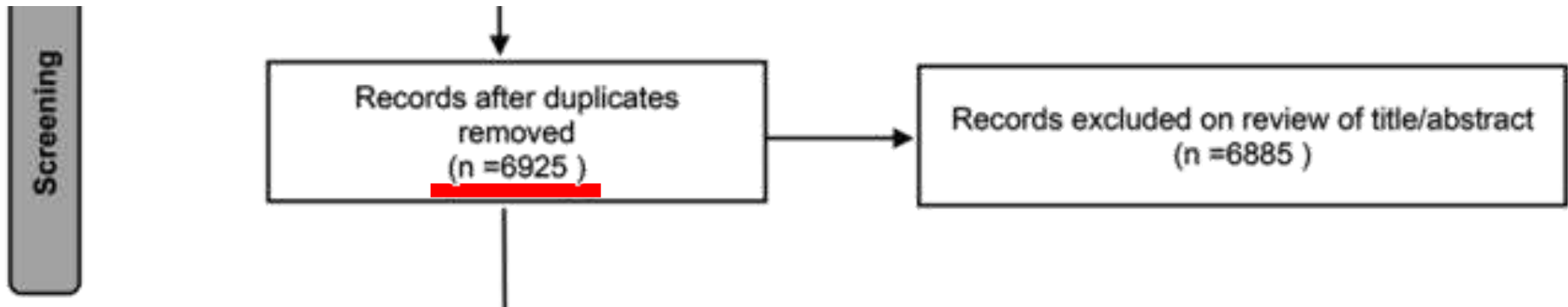
Figure 2. Flow diagram of study selection.

PRISMA

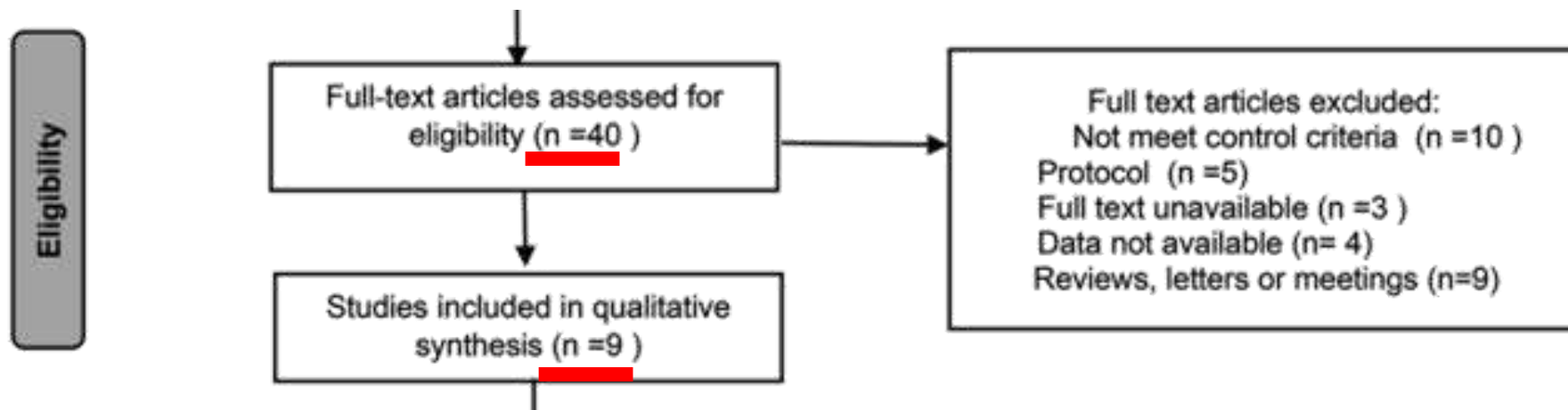
Identification of studies via databases and registers



PRISMA



PRISMA



PRISMA

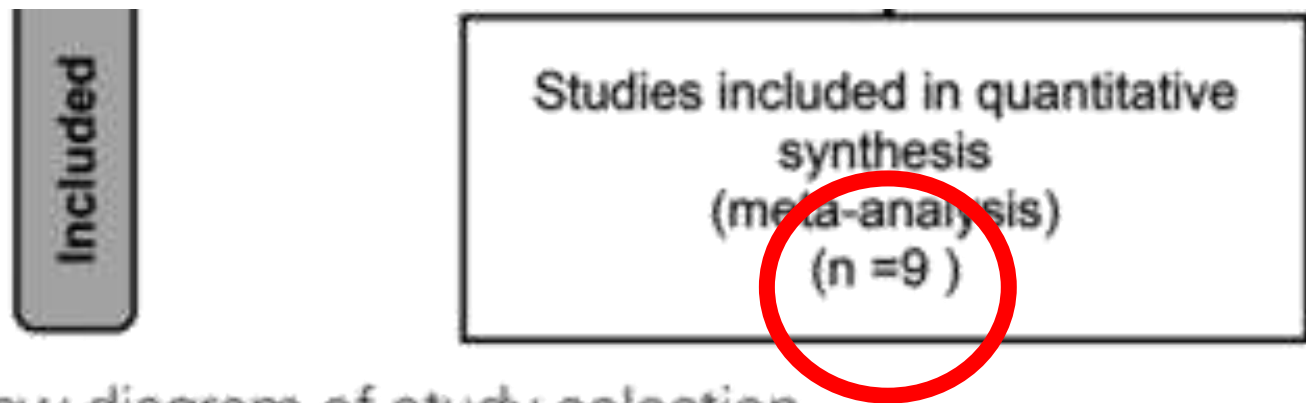


Figure 2. Flow diagram of study selection.

Table 1. Characteristics of the Included Studies^a

Author, Publication Year	Country	Characteristics of Study Population						Follow-up	Type of Fracture	ERAS Measures	Study Design	Outcomes
		Sample Size (N)		Age (Years)		Male/Female						
Gomez et al., 2019	France	27	27	84.5 (8.7)	85.0 (8.5)	7 M/20 F	7 M/20 F	1 year	Peritrochanteric fracture	2, 4	Prospective cohort study	LOS, readmission rates, 1-year mortality, overall complication rate, specific complication rate, DVT, delirium rate
Haugan et al., 2017	Norway	1,032	788	83.1	83.1	298 M/734 F	214 M/574 F	1 year	Hip fracture	4, 7, 9	Retrospective cohort studies	Mortality, readmission rates, LOS
Kang et al., 2019	China	50	50	77.81 (8.14)	77.81 (8.14)	20 M/30 F	20 M/30 F	1 year	Proximal femoral fracture	1, 2, 7, 8	Non-RCT	LOS, pain score, HHS, readmission rates, and mortality, DVT, delirium rate
Li et al., 2020	China	42	42	65.0 (5.3)	64.4 (5.2)	20 M/22 F	24 M/18 F	/	Hip fracture	1, 3, 4, 5, 8, 9	RCT	Pain score, HHS
Macfie et al., 2012	Danmark	117	115	76.9	77.5	42 M/136 F	85 M/272 F	6 months	Proximal femoral fractures	2, 3, 4, 8, 9	Retrospective cohort studies	LOS, complication rate, 1-year mortality, DVT
Pedersen et al., 2008	England	178	357	Male 76.9; female 83.9	Male 77.5; female 84.2	42 M/136 F	85 M/272 F	1 year	Hip fracture	2, 3, 4, 7, 8, 9	Retrospective cohort studies	Complication rate (delirium rate, pneumonia, and urinary tract infection), LOS, mortality, DVT
Pollmann et al., 2019	America	2,514	2,488	79.7 (11.7)	79.3 (11.9)	/	/	30 days	Hip fracture	1, 3, 4, 7, 8	Prospective cohort study	LOS, readmission rates, and complication rates
Sura-amonrattana et al., 2021	Thailand	100	100	70.5 (8.5)	70.5 (8.5)	50 M/50 F	50 M/50 F	1 year	Hip fracture	1, 2, 3, 4, 5, 6, 7, 8, 9	Retrospective cohort study	Incidence of medical complications, mortality, DVT

個案數：9篇，年分在2012~2021

性別：女性居多(約3700)

年齡：64-85歲

ERAS所探究結果：住院天數、一年內死亡率、合併症、疼痛控制、再入院率、DVT率、瞻望率

性別：女性居多(約3700)

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ERAS所探究結果：住院天數、一年內死亡率、合併症、疼痛控制、再入院率、DVT率、瞻望率

Note: DVT = deep vein thrombosis; ERAS = enhanced recovery after surgery; HHS = Harris Hip Score; LOS = length of stay; RCT = randomized controlled trial.

^aEnhanced recovery of surgery, not applicable. ERAS measures: (1) preoperative propaganda and education/psychological counseling, (2) optimizing anesthesia, (3) simplification of routine intestinal preparation before operation, (4) perioperative nutrition management, (5) perioperative heat preservation, (6) rational use of drainage tube and catheter, (7) postoperative analgesia, and (8) early postoperative standard functional exercise.



FAITH-文獻是否經過嚴格評讀

評讀結果：

☒ 是

☐ 否

☐ 不清楚

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Data Extraction

The two reviewers independently extracted data from the eligible studies, and any disagreements were discussed with a third reviewer to reach a consensus. The data extracted from the literature were as follows: author, publication year, country, age, sex, sample size, type of fractures, and outcome. The longest follow-up data on outcome for each study were extracted.

Quality Assessment

The Newcastle-Ottawa Scale (NOS) (Stang, 2010) was used to assess the methodological quality of the included studies in terms of selection, comparability, and outcome, with a maximum score of nine. Scores seven or more showed a low risk of bias, scores from four to six demonstrated a medium risk of bias, and scores less than four indicated a high risk of bias.

應根據不同臨床問題的文章類型,選擇適合的評讀工具,並說明每篇研究的品質(如針對治療型的臨床問題,選用隨機分配、盲法、及完整追蹤的研究類型)。

在文章的方法章節,可以找到所使用的文獻品質評讀標準的描述,而結果章節則會列出每篇研究品質的評讀結果。



(Newcastle-Ottawa Scale) NOS 量表

常用於評估觀察性研究（如回顧性研究或前瞻性研究）品質的工具

- 三大題分別為研究對象的選擇性（ Selection ）、研究組與對照組之間的比較（ Comparability ）、研究結果的評估（ Outcome ）為評分標準
- 依據評分共分三組
 - 0~3分為高偏差風險
 - 4~6分為中等
 - 7~9分為低偏差風險



FAITH-是否只納入良好效度的文章?

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僅進行文獻判讀
是不足夠,系統性
文獻回顧只納入
至少要有一項研
究結果是極小偏
誤的試驗。

Table 2. Quality Assessment of Included Studies

Study Source	Selection				Comparability	Outcome			Total Score
	Representativeness of the Exposed Cohort	Selection of the Nonexposed Cohort	Ascertainment of Exposure	Demonstration That Outcome of Interest was not Present at Start of Study	Comparability of Cohorts on the Basis of the Design or Analysis	Assessment of Outcome	Was Followed Enough for Outcome to Occur	Were Cohorts	
Gomez et al., 2019	1	1	1	1	2	1	1	1	9
Haugen et al., 2017	1	1	1	1	2	0	1	1	8
Kang et al., 2019	1	1	1	1	2	0	1	1	8
Li et al., 2020	1	1	1	1	2	0	0	1	7
Macle et al., 2012	1	1	1	1	2	0	1	1	8
Pedersen et al., 2008	1	1	1	1	1	1	1	1	8
Pollmann et al., 2019	1	1	1	1	2	0	1	1	8
Sura-anomthana et al., 2021	1	1	1	1	1	0	1	1	7
Liu et al., 2017	1	1	1	1	1	1	0	1	7

依據評分共分三組

- 0~3分為高偏差風險
- 4~6分為中等
- 7~9分為低偏差風險

文章質量：低偏差風險

評讀結果：

■ 是

□ 否

□ 不清楚

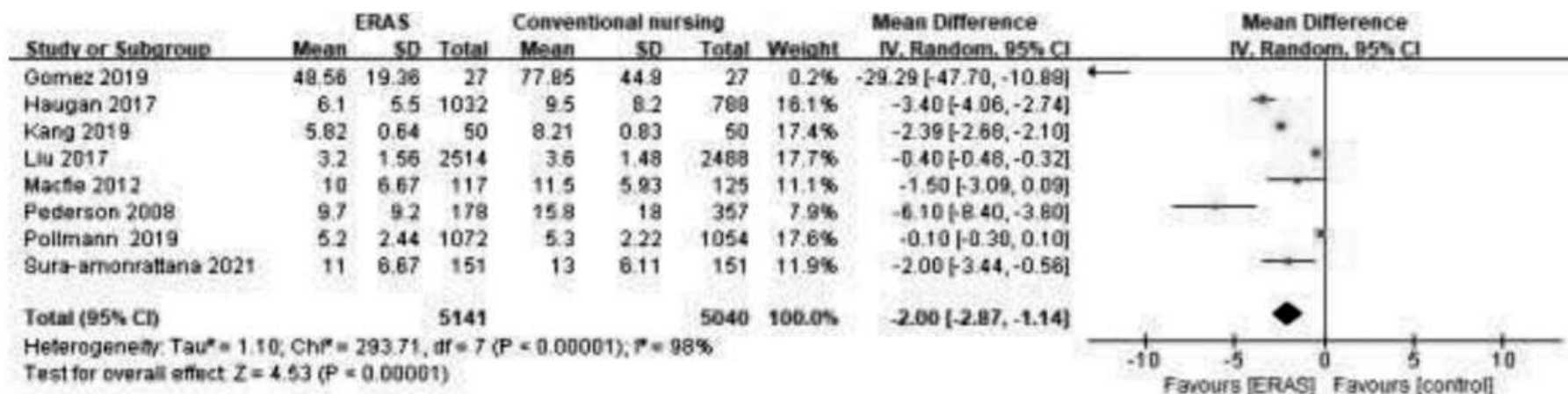


FAITH-是否以表格和圖表總結試驗結果 (1)

編號	森林圖表格名稱	
1	有無ERAS介入對於住院天	在理想情況下,各個試驗的結果應相近或具同質性,若具有異質性,作者應評估差異是否顯著(卡方檢定)。根據每篇個別研究中不同的 PICO 及研究方法,探討造成異質性的原因。 應該用至少 1 個摘要表格呈現所納入的試驗結果。若結果相近,可針對結果進行統合分析(meta-analysis),並以「森林圖」(forest plot)呈現研究結果,最好再加上異質性分析。
2	有無ERAS介入對於HHS評	
3	有無ERAS介入對於疼痛評	
4	有無ERAS介入對於一年內	
5	有無ERAS介入對於再入院	
6	有無ERAS介入對於整體併	
7	有無ERAS介入對於泌尿道感染之間關聯	
8	有無ERAS介入對於呼吸道感染之間關聯	
9	有無ERAS介入對於深部靜脈血栓發生率之間關聯	
10	有無ERAS介入對於瞻望發生率之間關聯	
11	漏斗圖表現偏差	

FAITH-是否以表格和圖表總結試驗結果 (1)

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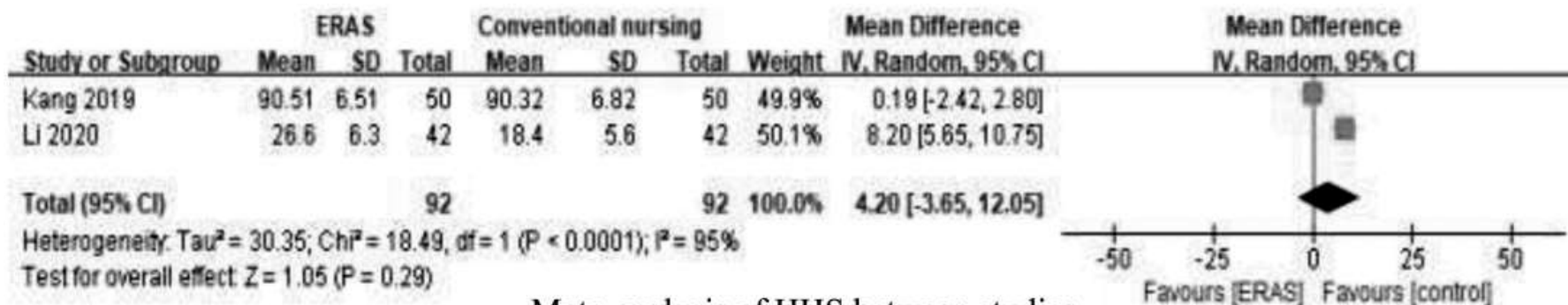


Meta-analysis of LOS across studies

$I^2 = 98\%$
 $P < 0.00001$

FAITH-是否以表格和圖表總結試驗結果 (2)

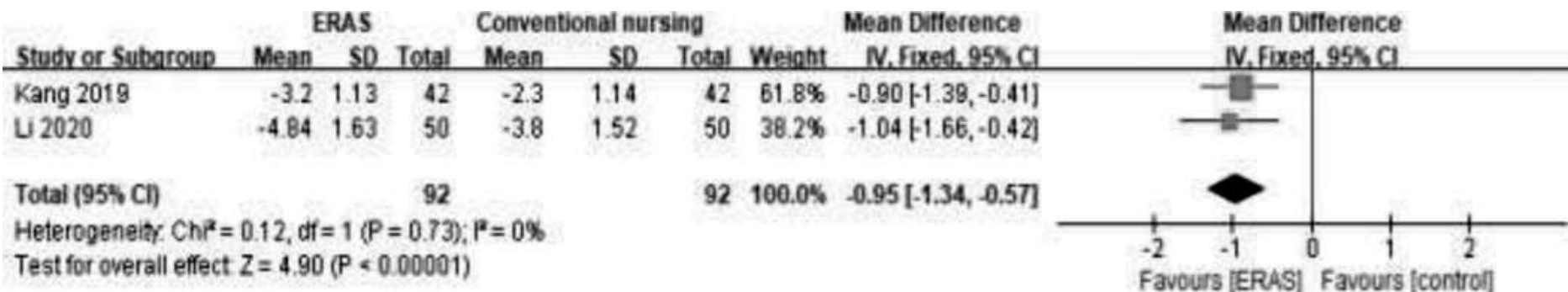
P.278



$I^2 = 95\%$
 $P = 0.29$

FAITH-是否以表格和圖表總結試驗結果 (3)

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Meta-analysis of pain score between studies

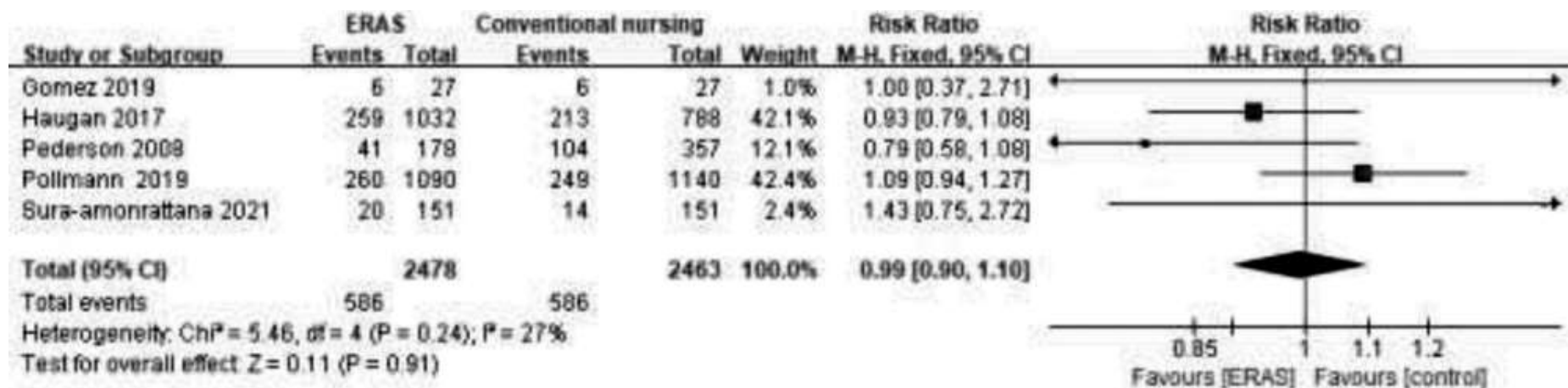
$$I^2 = 0\%$$

$$P < 0.00001$$



FAITH-是否以表格和圖表總結試驗結果 (4)

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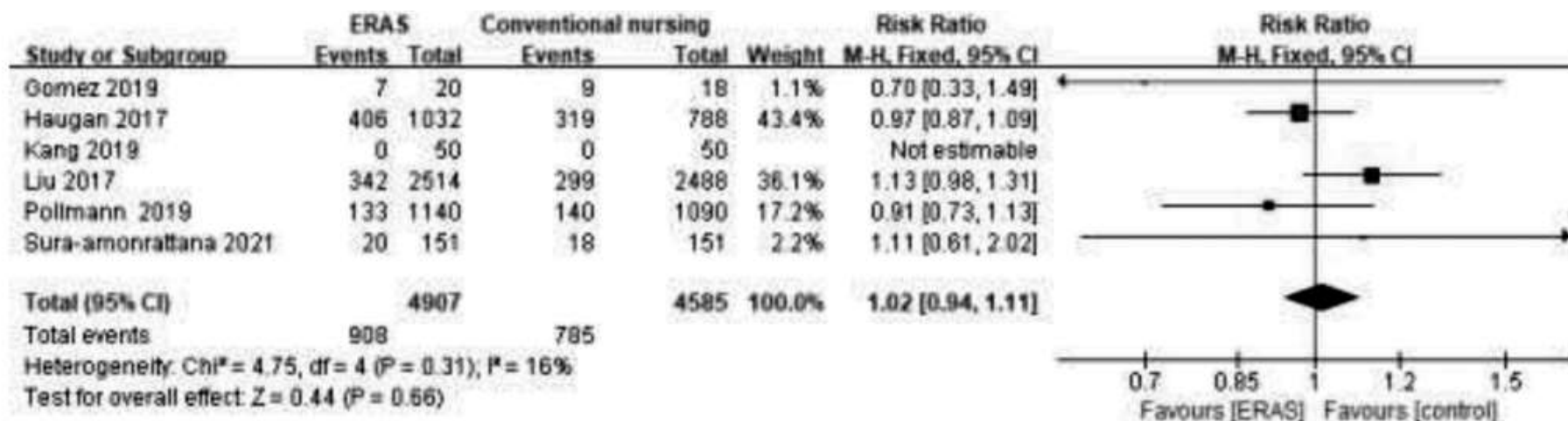
Meta-analysis of one-year mortality across studies

$I^2 = 27\%$

$P = 0.91$

FAITH-是否以表格和圖表總結試驗結果 (5)

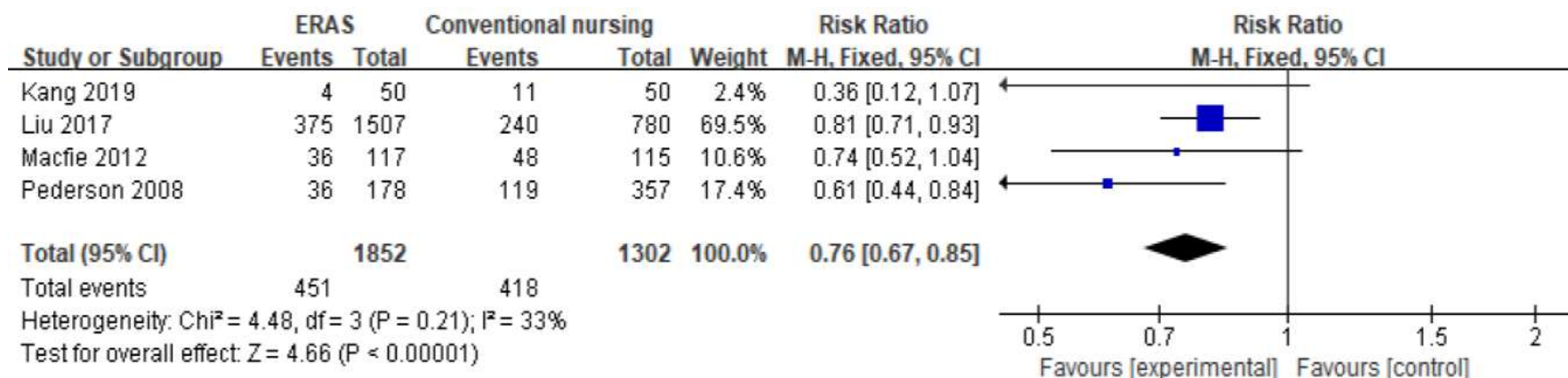
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Meta-analysis of readmission rate across studies

$I^2 = 16\%$
 $P = 0.66$

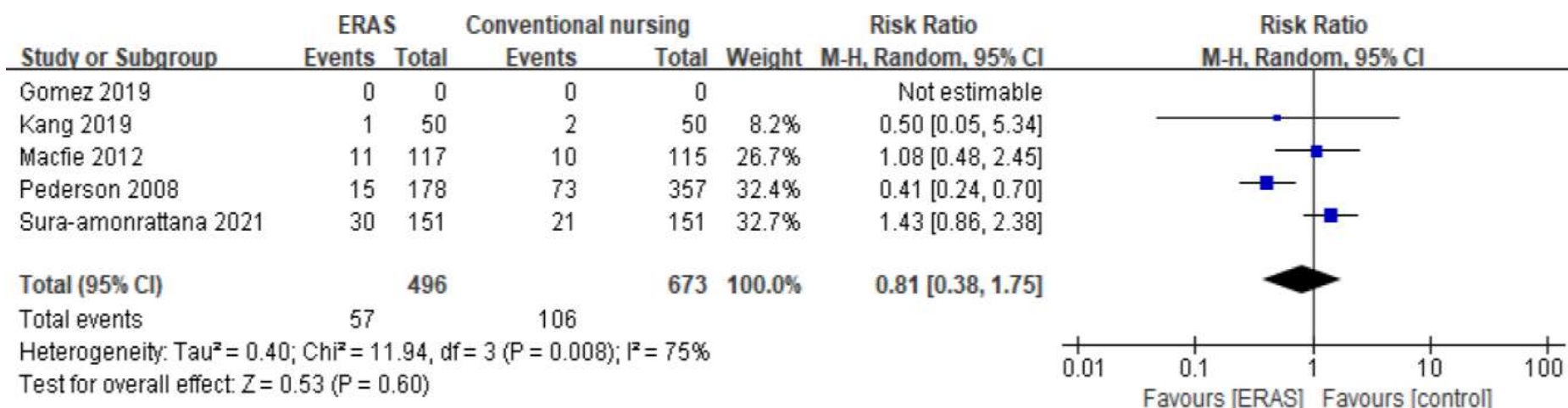
FAITH-是否以表格和圖表總結試驗結果 (6)



a. Meta-analysis of overall complication rate across studies

$I^2 = 33\%$
 $P < 0.00001$

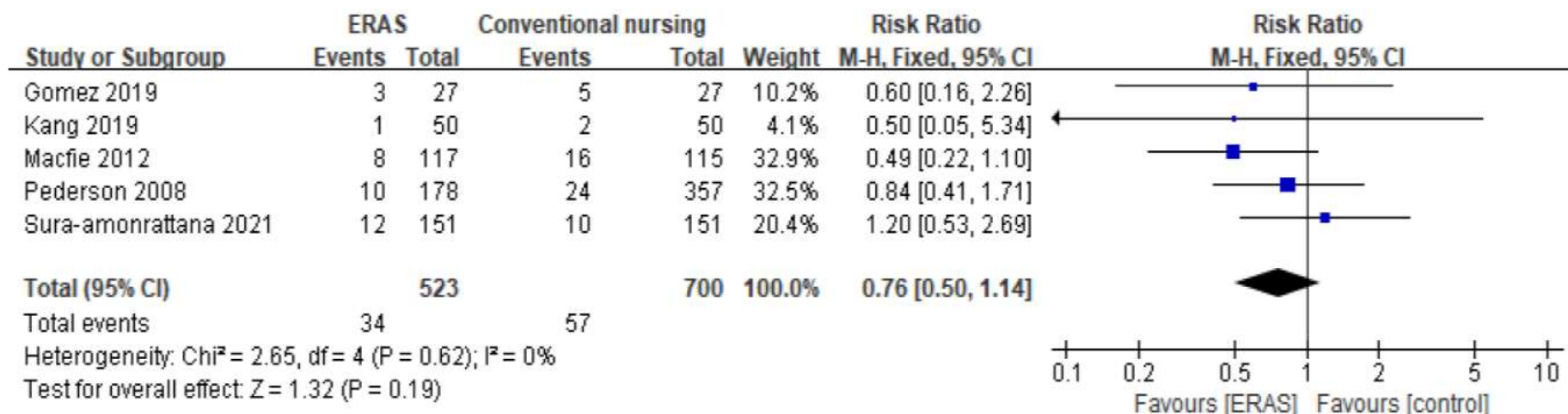
FAITH-是否以表格和圖表總結試驗結果 (7)



b. Meta-analysis of urinary tract infection rate across studies

$I^2 = 75\%$
 $P = 0.60$

FAITH-是否以表格和圖表總結試驗結果 (8)

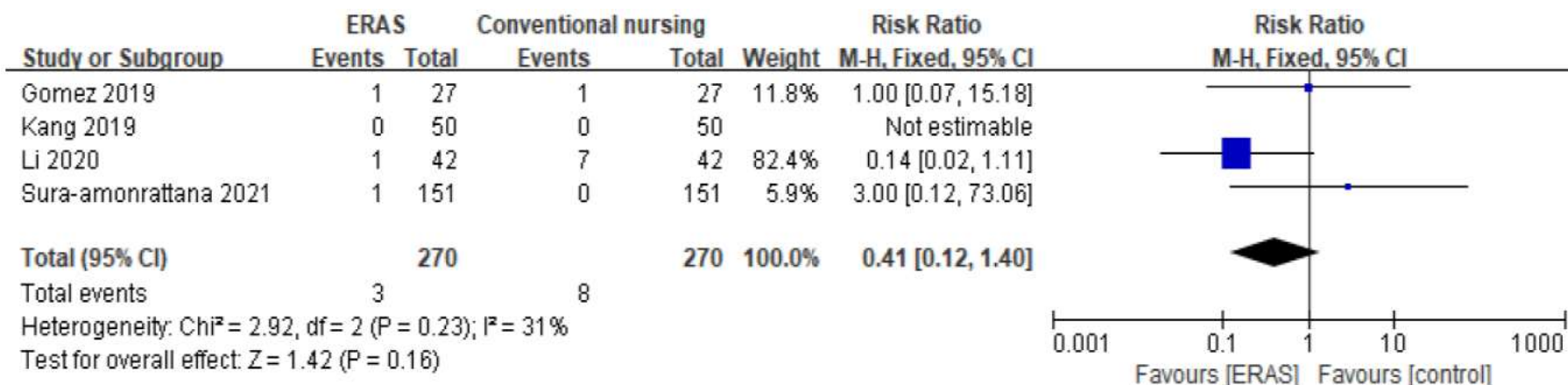


c. Meta-analysis of respiratory tract infection rate across studies

$I^2 = 0\%$

$P = 0.19$

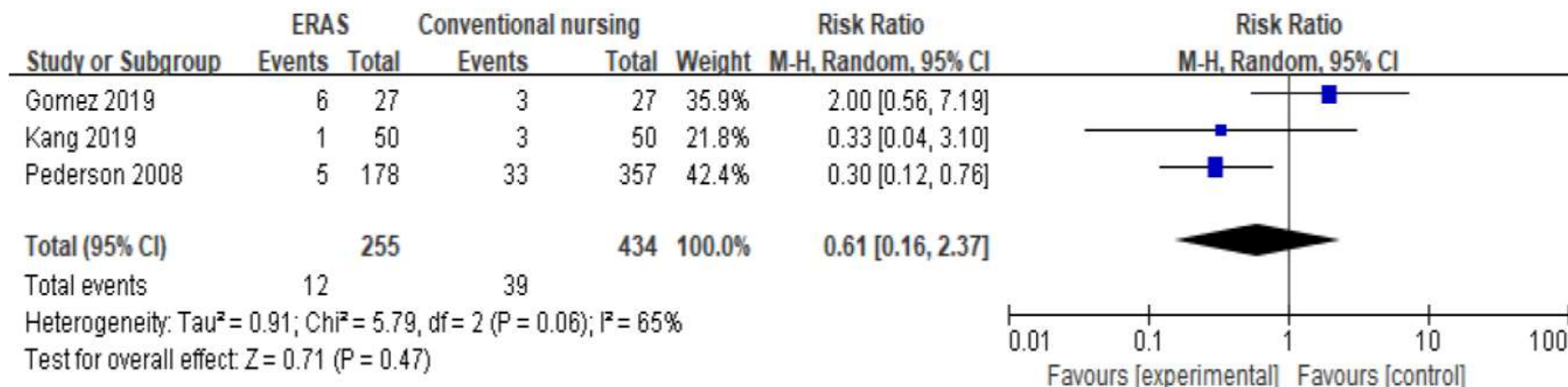
FAITH-是否以表格和圖表總結試驗結果 (9)



d. Meta-analysis of deep vein thrombosis rate across studies

$I^2 = 31\%$
 $P = 0.16$

FAITH-是否以表格和圖表總結試驗結果 (10)



e. Meta-analysis of delirium rate across studies

$I^2 = 65\%$
 $P = 0.47$

FAITH-是否以表格和圖表總結試驗結果 (11)

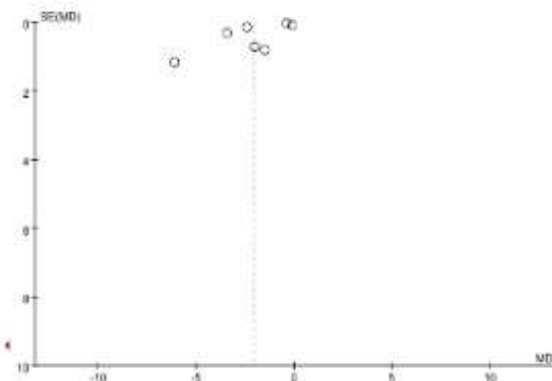
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Publication Bias

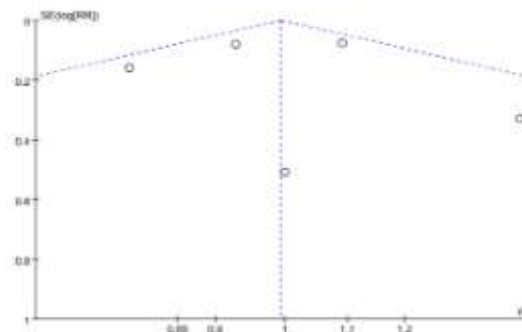
The funnel plot and Egger's test were used to examine for publication bias. Egger's test showed no publication bias in LOS, 1-year mortality, readmissions, urinary tract infections, or respiratory tract infections ($p = .26, .77, .87, .98, .60$; see Supplemental Digital Content Figure 5, available at: <http://links.lww.com/JTN/A117>). Egger's test showed there was publication bias in the DVT rate ($p = .001$).



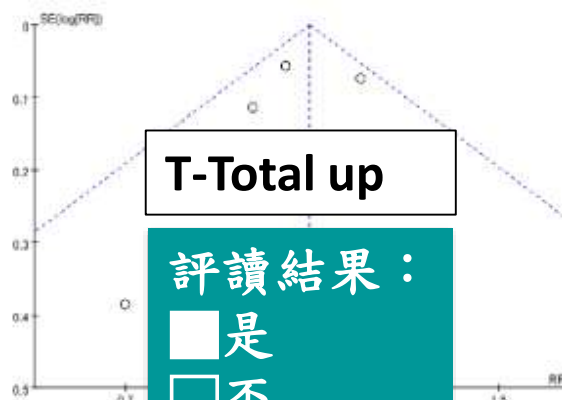
FAITH-是否以表格和圖表總結試驗結果 (11)



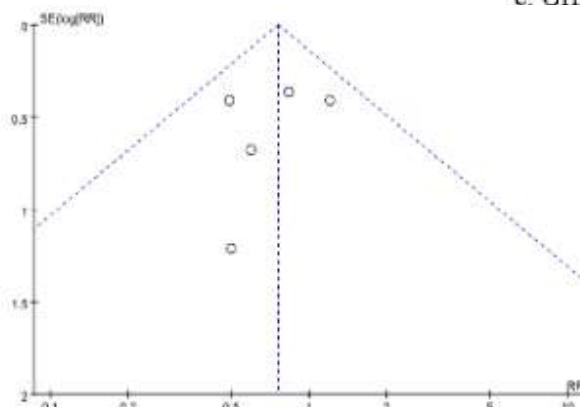
a. LOS



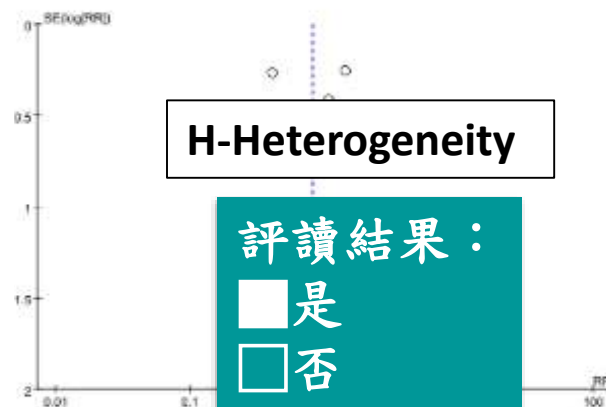
b. One-year mortality



e. Urinary tract infection rate



d. Respiratory tract infection rate



T-Total up

評讀結果：

- ☒ 是
- ☐ 否
- ☐ 不清楚

H-Heterogeneity

評讀結果：

- ☒ 是
- ☐ 否
- ☐ 不清楚

評讀總表

系統性文獻回顧品質	評讀結果
研究是否找到(Find) 所有的相關證據？	不清楚
文獻是否經過嚴格評讀(Appraisal)？	是
是否只納入(Included)具良好效度的文章？	是
作者是否以表格和圖表「總結」(Total up)試驗結果？	是
試驗的結果是否相近-異質性(Heterogeneity)？	是

結論

本篇結果，ERAS介入對於髌部骨折患者的預後具有潛在的益處，例如減少住院時間、緩解手術後疼痛以及降低手術後併發症的發生率。



限制、建議

1. 老年病人的危險因子影響，如高齡、吸煙、潛在疾病（如糖尿病和高血壓），導致傷口癒合不良。
2. 由於較無法呈現不同文獻間的次群體分析數據之關聯性，進而影響了結果的一致性。



回到臨床

髌部骨折病人，手術後止痛方式有

- 自費麻醉科止痛模組介入
- 使用健保用止痛藥物
- 於病房自費使用止痛藥物
- 物理止痛方式(冰敷、轉移注意力)

雖然目前已有多種止痛方式可提供病人選擇，但卻缺乏強制讓病人可以提早下床活動的模式，導致臨床上髌部骨折患者有多種理由拒絕、拖延下床，進而延長住院時間。





臺北市立萬芳醫院 - 委託臺北醫學大學辦理

Taipei Municipal Wanfang Hospital (Managed by Taipei Medical University)

Q & A



依系統性文獻回顧之結論

- ERAS介入是否適合納入髌部骨折病人的照護常規？







敬請指導

