



# 血液透析患者使用冰敷療法是否可以減少穿刺瘻管時的疼痛感？

洗腎中心

報告者：吳佩娟

護理長：劉秋芬

報告日期：111/12/27

# 大綱

- 臨床情境與問題
- 選用文獻
- 系統性文獻回顧-FAITH評讀
- 臨床應用



# 前言

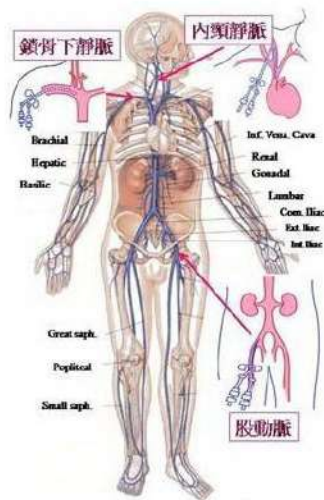
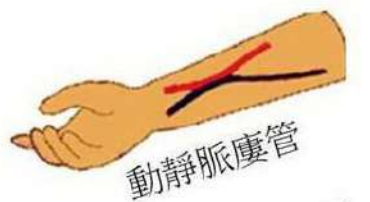
- 洗腎病人必須每週進行二到三次透析，每次透析需穿刺2針，每週6針，每年大約穿刺 **300** 針。  
(Nesami., etal. 2020)
- 有 **19.5%** 的血液透析患者認為穿刺有劇烈疼痛感。將其描述為不愉快和難以忍受的問題。  
(Cheng., etal. 2021)
- 「**疼痛**」是血液透析患者常見的併發症之一。洗腎患者因持續疼痛感，可導致心理變化，也會影響患者對血液透析的接受程度，最終降低生活質量。因此，**控制疼痛**也是照護透析病患的重點。

# 單位現況

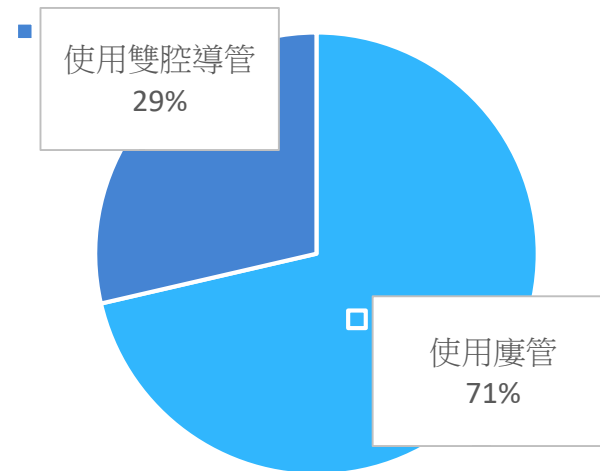
- 本單位總床數61床，統計2022年11月門診透析病人共311人，其中有222人使用瘻管穿刺進行透析，占比71.4%

長期性「血液透析」血管通路

暫時性「血液透析」導管



比例



# 血液透析瘻管穿刺針介紹

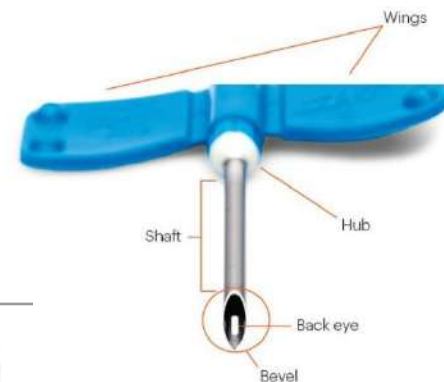
1. 病人辨識
2. 核對醫囑

瘻管穿刺針  
動脈端與靜脈端



靜脈留置針

20~24G



| 針號<br>(G) | 對應血流<br>(mL/min) | 針的直徑<br>(mm) | 顏色 | 針長<br>(mm) | 廠牌      |
|-----------|------------------|--------------|----|------------|---------|
| 15        | 300~350          | 1.8          | 藍  | 25         | 維泰/馬來西亞 |
| 16        | 200~300          | 1.6          | 綠  | 25         | 維泰/馬來西亞 |
| 17        | 150~220          | 1.4          | 橘  | 25         | 維泰/馬來西亞 |

臺灣更新新聞 | 2020/12/8 下午 05:35:45



臺北市立萬芳醫院  
-委託財團法人臺北醫學大學辦理-

# 進行透析穿刺步驟

穿刺前的護理人員進行評估

問診

視診 (Look)

Physical examination

觸診 (Feel)

聽診 (Listen)



哪一種方法可以 既安全 又容易執行 且  
能有效降低病人的疼痛?





# 非侵入性介入止痛方式

- Sabitha 等人(2008)於非癱管側的手中（合谷穴）握冰袋 10 分鐘後，結果呈現除了NSR疼痛指數相較對照組有顯著差異( $P = .001$ )外，更在疼痛行為表現方面亦達顯著差異( $P = .001$ )。
- Arab等人(2017)採一組於穿刺前 12 分鐘塗抹 2% lidocaine gel，相較另一組於非癱管側的手中（合谷穴）握冰袋 10 分鐘，兩組間介入後的成效無差異( $P = .23$ )，但兩組分別於介入前後VAS 疼痛指數各達顯著差異( $P < .001$ )。



# 選用文獻

Complementary Therapies in Medicine 49 (2020) 102326



Contents lists available at ScienceDirect

## Complementary Therapies in Medicine

journal homepage: [www.elsevier.com/locate/ctim](http://www.elsevier.com/locate/ctim)



### Effect of cryotherapy on arteriovenous fistula puncture-related pain in hemodialysis patients: A systematic review and meta-analysis

Azar jafari-koulaee<sup>d,\*</sup>, Mahmood Moosazadeh<sup>c</sup>, Masoumeh Bagheri Nesami<sup>a,b</sup>, Amir Hossein Goudarzian<sup>a</sup>

<sup>a</sup> Traditional and Complementary Medicine Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, Iran

<sup>b</sup> World Federation of Acupuncture-Moxibustion Societies (WFAS), Beijing, China

<sup>c</sup> Health Sciences Research Center, Mazandaran University of Medical Sciences, Sari, Iran

<sup>d</sup> Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran



| JCR YEAR | JIF RANK | JIF QUARTILE | 2021 JOURNAL IMPACT FACTOR |
|----------|----------|--------------|----------------------------|
| 2021     | 12/30    | Q2           | 3.335                      |

DOI:10.1002/lary.30019



證據等級  
最高

2021  
JOURNAL  
IMPACT FACTOR  
3.335

發表年代  
最新



# 文章背景說明

- 共納入8篇文獻
  - RCT：3篇
  - 實驗研究設計：5篇
- 樣本數：16歲以上洗腎病人
- 冰敷處：在對側手臂（沒有AVF的手）的拇指和食指之間（合谷點或 LI4）放置冰袋。
- 冰敷時間：在靜脈穿刺～直到整個穿刺過程＜約 5 ～ 1 2 分鐘＞



# Appraisal sheets(FAITH)

- Appraisal Tool
  - [統合分析 Meta-analysis]
    - **步驟1：研究探討的問題為何 (PICO)**
    - 步驟2：研究的品質如何 (內在效度)
    - 步驟3：研究結果之意義為何 (效益)

# 步驟 1：系統性文獻回顧探討的問題為何？

研究族群 / 問題 (Population/ Problem) :

- Hemodialysis patient

介入措施 (Intervention) :

- Cryotherapy

比較 (Comparison) :

- Non cryotherapy

結果 (Outcomes) :

- Reduce the fistula puncture pain



# Appraisal sheets(FAITH)

- Appraisal Tool
  - [統合分析 Meta-analysis]
    - 步驟1：研究探討的問題為何 (PICO)
    - **步驟2：研究的品質如何 (內在效度)**
    - 步驟3：研究結果之意義為何 (效益)

# FAITH快速評讀

## Find

研究是否「找到」  
所有的相關證據？

## Appraisal

文獻是否經過  
嚴格「評讀」？

## Included

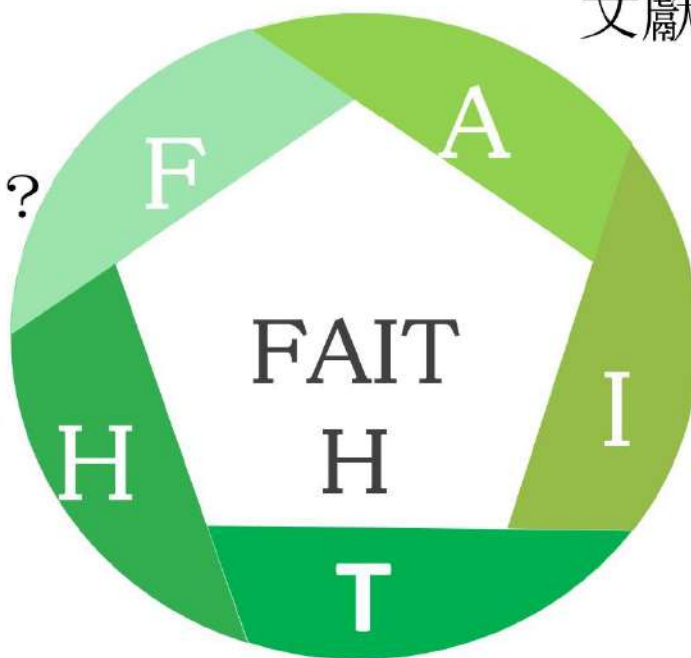
是否只「納入」  
具良好效度的文章

## Total up

作者是否以表格和圖表「總結」試驗結果？

## Heterogeneity

試驗的結果是否  
相近-「異質性」？





# 步驟 2：系統性文獻回顧的品質如何?(FAITH)

## •【F】研究是否找到 (Find) 所有的相關證據？

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**)。

### 2.1. Search strategy

P.2 International Databases (including Embase, Web of Science, Medline via PubMed, Scopus, and ProQuest), and Iranian databases (including Scientific Information Database [SID], and Magiran) were searched by two independent researchers (AJK and AHG) from the time of establishment of the above mentioned databases to the first of March, 2019. Databases were searched by using the keywords including Cryotherapy, Ice, Punctures, Catheterization, Pain, and Fistula (using AND & OR operators). The IRANDOC and Civilica databases were also searched for the related theses and the papers presented at congresses and the papers were reviewed as well respectively. The references at the end of the articles were also reviewed for additional sources.

### 2.2. Inclusion & exclusion criteria

P.2 Studies that contained the following criteria were entered to the study: 1) Interventional studies that investigated the effect of cryotherapy on the fistula puncture-related pain in hemodialysis patients, 2) Published in Persian or English languages, 3) In the interventional group of the study, Cryotherapy should be conduct by placing ice packs between the thumb and index finger (Hegu's point or LI4) of the contralateral arm (the hand not having the AVF). Articles that were not fully accessible were also excluded from the review.

- ✓ 至少兩個主要資料庫
- ✓ 搜尋策略使用關鍵字 (未提及有無使用MESH term或text words)
- ✓ 審查所有文獻的參考文獻清單
- ✓ 收錄的文獻來自各國，英語或波斯語的研究被包括在研究中。





# 步驟 2：系統性文獻回顧的品質如何?(FAITH)

## •【F】研究是否找到 (Find) 所有的相關證據？

在文章的方法(Methods)章節，可以找到詳細搜尋策略的說明，包括使用的名詞，結果(Results)章節中可以找到本篇系統性文獻回顧評估的摘要及全文文獻數目、文獻納入與排除的數量及原因。資料可能會以圖表或 PRISMA 的流程圖呈現。

The following search strategies were used:

- Scopus: (TITLE-ABS-KEY (cryotherapy) OR TITLE-ABS-KEY (ice) AND TITLE-ABS-KEY (pain) AND TITLE-ABS-KEY (punctures) OR TITLE-ABS-KEY (catheterization) AND TITLE-ABS-KEY (fistula))
- PubMed/Medline: (((((cryotherapy[Title/Abstract]) OR ice[Title/Abstract]) AND pain[Title/Abstract]) AND punctures[Title/Abstract]) OR catheterization[Title/Abstract]) AND fistula[Title/Abstract]) Filters: Full text; Humans
- Web of Science: TS=((cryotherapy\* OR ice) AND pain\* AND (punctures OR catheterization) AND fistula))

Refined by: DOCUMENT TYPES: (Article)

- EMBASE: ('cryotherapy' OR 'ice') AND ('pain'/exp OR 'pain') AND ('punctures' OR 'catheterization') AND ('fistula'/exp OR fistula)
- ProQuest: ti(cryotherapy) OR ti(ice) AND ti(pain) AND ti(punctures) OR ti(catheterization) AND ti(fistula)
- SID: (cryotherapy OR ice) AND (punctures OR catheterization) AND (pain) AND (fistula)
- Magiran: (cryotherapy OR ice) AND (punctures OR catheterization) AND (pain) AND (fistula)

✓ 可以找到詳細搜尋策略的說明，包括使用的名詞

### 3.1. Descriptions of studies

The results showed the positive effect of cryotherapy on reducing the fistula puncture-related pain in hemodialysis patient. The total number of participants in all articles reviewed during the systematic review was 422 (8 studies) and the age of participants was 16 years and above. In all interventional studies, cryotherapy was performed by

### 2.3. Quality assessment

Then, the methodological quality of the articles was evaluated based on the standard JADAD checklist for the remaining articles by two independent researchers (AJ and AHG). The JADAD checklist consisted of three items of randomization, blinding, and dropouts report directly related to bias control in the interventional studies. If these studies get scores of 1–2 and scores of 3–5 in the quality assessment of studies, they ranked respectively as low quality studies and high quality studies.<sup>25</sup> Also, in the present study, after quality assessment, studies with scores of 3 and more than 3 were included based on the JADAD checklist.<sup>25</sup> After evaluating the quality of the articles, eight studies finally entered the systematic review process (Qualitative Synthesis). In order to conduct meta-analysis, one study was excluded because of failure to report standard deviation of pain score and another study was excluded due to failure to report mean and standard deviation of pain score and reporting median pain score instead, thus eventually six studies were evaluated for meta-analysis (Quantitative Synthesis).

✓ 可以找到評估的摘要及全文文獻數目、文獻納入與排除的數量及原因



# 步驟 2：系統性文獻回顧的品質如何?(FAITH)

## •【F】研究是否找到 (Find) 所有的相關證據？

在文章的方法(Methods)章節，可以找到詳細搜尋策略的說明，包括使用的名詞，結果(Results)章節中可以找到本篇系統性文獻回顧評估的摘要及全文文獻數目、文獻納入與排除的數量及原因。資料可能會以圖表或 PRISMA 的流程圖呈現。

### 2.2. Inclusion & exclusion criteria

Studies that contained the following criteria were entered to the study: 1) Interventional studies that investigated the effect of cryotherapy on the fistula puncture-related pain in hemodialysis patients, 2) Published in Persian or English languages, 3) In the interventional group of the study, Cryotherapy should be conduct by placing ice packs between the thumb and index finger (Hegu's point or LI4) of the contralateral arm (the hand not having the AVF). Articles that were not fully accessible were also excluded from the review.

In the next step, duplicate articles were removed with the help of Endnote software. Then two researchers (AJK and MBN) independently reviewed the titles and abstracts of the articles. Articles were included in the study or excluded from the study according to the determined criteria. In a primary screening of the articles, articles were selected after evaluating the thematic relevance of the article titles to the aims of the article, evaluating the relevance of abstract with the study aims, and after evaluating the full text of the articles and its relevance to the study aims. The flowchart of articles selection steps is shown in Fig. 1.

✓ 可以找到納入與排除的條件

P.2





# Included FAITH-步驟 2：系統性文獻回顧的品質如何(I)

## 【F】是否只納入 (Included) 具良好效度的文章？

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。

In the next step, duplicate articles were removed with the help of Endnote software. Then two researchers (AJK and MBN) independently reviewed the titles and abstracts of the articles. Articles were included in the study or excluded from the study according to the determined criteria. In a primary screening of the articles, articles were selected after evaluating the thematic relevance of the article titles to the aims of the article, evaluating the relevance of abstract with the study aims, and after evaluating the full text of the articles and its relevance to the study aims. The flowchart of articles selection steps is shown in Fig. 1.

- ✓ 兩位研究人員（AJK 和 MBN）根據確定的標準，獨立審閱了文章的標題和摘要。



# 步驟 2：系統性文獻回顧的品質如何?(FAITH)

## •【F】研究是否找到 (Find) 所有的相關證據？

在文章的方法(Methods)章節，可以找到詳細搜尋策略的說明，包括使用的名詞，結果(Results)章節中可以找到本篇系統性文獻回顧評估的摘要及全文文獻數目、文獻納入與排除的數量及原因。資料可能會以圖表或 PRISMA 的流程圖呈現。

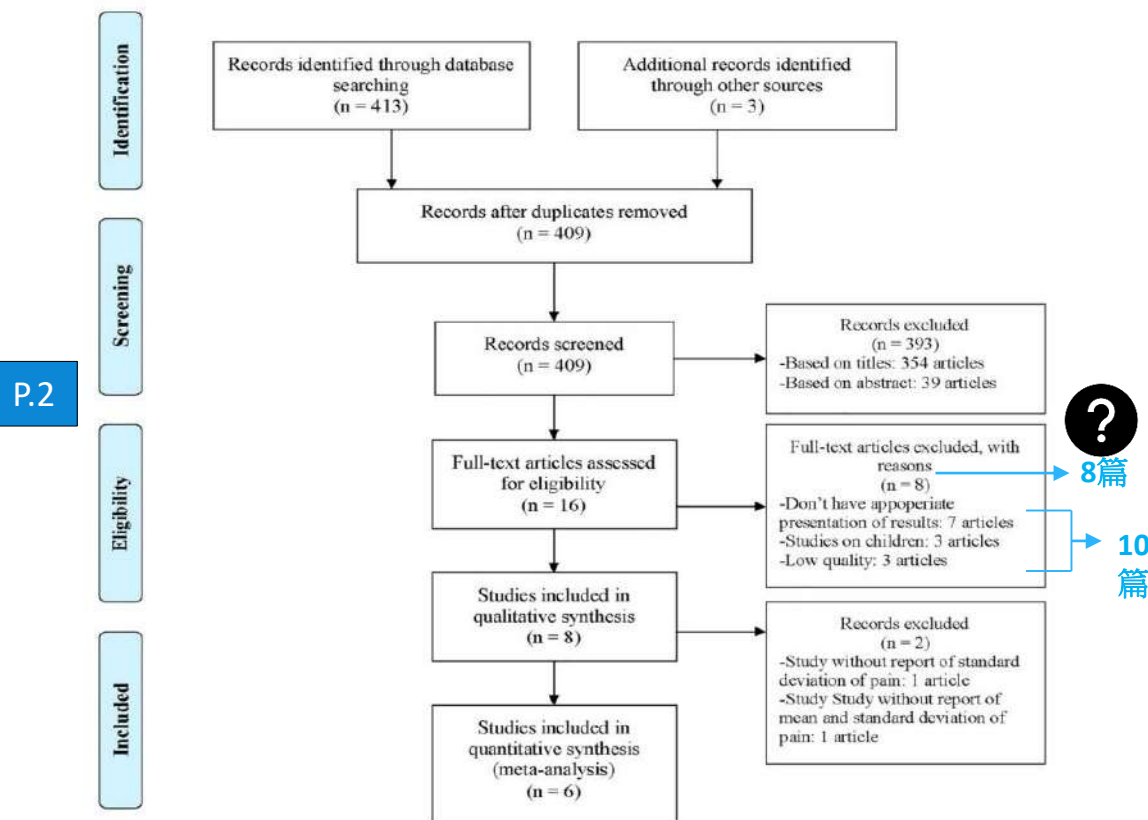


Fig. 1. Flowchart of articles' selection.

✓ 以圖表或 PRISMA 的流程圖呈現

經過文章質量的評估，8項研究進入了系統評價過程 (Qualitative Synthesis)。

一項研究因未報告疼痛評分的標準差而被排除，另一項研究因未報告疼痛評分的均值和標準差而報告中位疼痛評分而被排除

因此最終有6項研究進行了分析評估。

評讀結果：●是○否  
○不清楚

# Appraisal FAITH-步驟 2：系統性文獻回顧的品質如何(A)

**【A】-文獻是否經過嚴格評讀**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)。

## 2.3. Quality assessment

Then, the methodological quality of the articles was evaluated based on the standard JADAD checklist for the remaining articles by two independent researchers (AJ and AHG). The JADAD checklist consisted of three items of randomization, blinding, and dropouts report directly related to bias control in the interventional studies. If these studies get scores of 1–2 and scores of 3–5 in the quality assessment of studies, they ranked respectively as low quality studies and high quality studies.<sup>25</sup> Also, in the present study, after quality assessment, studies with scores of 3 and more than 3 were included based on the JADAD checklist.<sup>25</sup> After evaluating the quality of the articles, eight studies finally entered the systematic review process (Qualitative Synthesis). In order to conduct meta-analysis, one study was excluded because of failure to report standard deviation of pain score and another study was excluded due to failure to report mean and standard deviation of pain score and reporting median pain score instead, thus eventually six studies were evaluated for meta-analysis (Quantitative Synthesis).

P.2

- ✓ 由二位研究人員(AJ and AHG)以JADAD查檢表獨立評讀納入文章的品質，但未說明意見不一致時處理的方式。
- ✓ 以 JADAD checklist評比收納研究品質



# JADAD checklist

| Eight items  | Answer        | Score |
|--|---------------|-------|
| Was the study described as randomized?                             | Yes           | +1    |
|  | No            | 0     |
| Was the method of randomization appropriate?                       | Yes           | +1    |
|  | No            | -1    |
|  | Not described | 0     |
| Was the study described as blinding? <sup>a</sup>                  | Yes           | +1    |
|  | No            | 0     |
| Was the method of blinding appropriate?                            | Yes           | +1    |
|  | No            | -1    |
|  | Not described | 0     |
| Was there a description of withdrawals and dropouts?               | Yes           | +1    |
|  | No            | 0     |
| Was there a clear description of the inclusion/exclusion criteria? | Yes           | +1    |
|  | No            | 0     |
| Was the method used to assess adverse effects described?           | Yes           | +1    |
|  | No            | 0     |
| Was the methods of statistical analysis described?                 | Yes           | +1    |
|  | No            | 0     |

a: double-blind got 1 score, single-blind got 0.5 score.

Jadad 分數表

| 評估項目                                    | 分數          | 說明   |
|---|-------------|--|
| 1. 是否隨機分派 (randomized)                  | 2<br>1<br>0 | 詳細說明如何進行隨機分派方式且正確提及採隨機分派，但未說明方式<br>未採隨機方式如類實驗法   |
| 2. 是否雙盲實驗 (double-blind)                | 2<br>1<br>0 | 具體說明如何進行雙盲實驗，且被認為恰當提及採雙盲實驗，但未說明如何進行<br>使用單盲或未採盲化 |
| 3. 對失聯及退出樣本的追蹤 (withdrawals & drop-out) | 1<br>0      | 清楚說明個案退出及失聯原因<br>未說明個案退出及失聯原因                    |

Scores  $\geq 3$  was considered with high-quality.

評讀結果：●是○否  
○不清楚





# Included FAITH-步驟 2：系統性文獻回顧的品質如何

(I)

【I】是否只納入 (Included) 具良好效度的文章？

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。

Summary of Data Extracted from the Included Articles (N = 8).

| Author (year)              | Study Design                               | Sample size (n)     | Gender (Male/Female)                                    | Type of Intervention   | Variable/ Instruments  | Results   | Conclusion   | Quality of study (total score based on Jadad scale) |
|----------------------------|--|---------------------|---|--|--|---|--|---|
| Al Amer, et al (2017)      | Experimental                               | ni = 31;<br>nc = 31 | No reported   | Cryotherapy (ice packs on between the thumb and index finger of the contralateral arm (the hand not having the AVF), started ten minutes before venipuncture and throughout the puncturing procedure (approximately two minutes)<br>TTI = 12 min   | AVF Cannulation-Related Pain/ Wong-Baker pain scale  | -Pretest (control group): Mean = 3.1<br>-Posttest (control group): Mean = 2.8<br>-Pretest (experimental group): Mean = 2.8<br>-Posttest (experimental group): Mean = 1.0<br><br>(P < 0.05)  | Cryotherapy can relieve AVF cannulation-related pain among adult patients undergoing HD.   | 3   |
| Sabitha, et al (2008)      | Randomized Control trial                   | ni = 30;<br>nc = 30 | Control group = 23/7<br><br>Experimental group = 23/7   | Cryotherapy (ice packs on between the thumb and index finger of the contralateral arm (the hand not having the AVF), started ten minutes before venipuncture and throughout the puncturing procedure (approximately two minutes)<br>TTI = 12 min   | AVF puncture related pain / An observation checklist for assessing objective pain behaviors, and a numerical rating scale for subjective pain assessment | -Day 1 of HD (control group): Median (Range) = 3.2<br>-Day 2 of HD (control group): Median (Range) = 3.5<br><br>-Day 1 of HD (experimental group): Median (Range) = 4.5(2-7)<br>-Day 2 of HD (experimental group): Median (Range) = 2(1-2.5)<br>(P < 0.05)  | Objective and subjective pain scores were found to be significantly decreased within the experimental group with the application of cryotherapy. | 3   |
| Aghajanianloo et al (2016) | Randomized Control trial                   | ni = 25;<br>nc = 25 | Control group = 10/15<br><br>Experimental group = 12/13 | Cryotherapy (ice packs on between the thumb and index finger of the contralateral arm (the hand not having the AVF), started ten minutes before venipuncture and throughout the puncturing procedure (approximately three minutes)<br>TTI = 13 min | AVF puncture related pain/ Visual Analog Scale (VAS)   | -Session One (control group): Mean $\pm$ SD = 5.5 $\pm$ 0.82<br>-Session Two (control group): Mean $\pm$ SD = 5.1 $\pm$ 1.2<br><br>-Session One (experimental group): Mean $\pm$ SD = 5.9 $\pm$ 0.9<br>-Session Two (experimental group): Mean $\pm$ SD = 3.2 $\pm$ 1.7<br>-Between two groups (Session Two): (P = 0.001) | Cryotherapy could be effective in the prevention of the pain associated with AVF cannulation.  | 3   |
| Sivagami (2011)            | Quasi experimental pretest posttest design | ni = 30;<br>nc = 30 | Control group = 21/9<br><br>Experimental group = 21/9   | Cryotherapy (ice packs on between the thumb and index finger of the contralateral arm (the hand not having the AVF), started ten minutes before venipuncture and throughout the puncturing procedure<br>TTI = 10 min                               | AVF Puncture Related Pain/ Numerical Pain Assessment Scale   | -Pretest (experimental group): Mean $\pm$ SD = 5.5 $\pm$ 1.0<br><br>-Posttest (experimental group): Mean $\pm$ SD = 4.0 $\pm$ 1.4<br>-Pretest (control group): Mean $\pm$ SD = 5.9 $\pm$ 0.9<br>-Posttest (control group): Mean $\pm$ SD = 5.9 $\pm$ 0.9  | Cryotherapy helps in decreasing the level of avf puncture related pain among clients undergoing hemodialysis.                                    | 3   |

(continued on next page)

實(類)驗型研究設計: 2篇

RCT: 2篇





# Included FAITH-步驟 2：系統性文獻回顧的品質如何

(I)

【I】是否只納入 (Included) 具良好效度的文章？

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 1 (continued)

| Author (year)            | Study Design                                      | Sample size (n)     | Gender (Male/Female)  | Type of Intervention  | Variable/ Instruments                                  | Results   | Conclusion  | Quality of study (total score based on Jadad scale) |
|--------------------------|---|---------------------|---|---|--|---|---|---|
| 5<br>Kavipriya, (2016)   | Experimental posttest only control group design   | ni = 30;<br>nc = 30 | Control group = 22/8<br><br>Experimental group = 19/11        | Cryotherapy (ice packs on between the thumb and index finger of the contralateral arm (the hand not having the AVF), started six minutes before venipuncture and throughout the puncturing procedure (approximately two minutes)<br>TTI = 8 min   | AVF puncture pain/<br>Numerical Pain Scale             | -Posttest (experimental group): Mean $\pm$ SD = $2.6 \pm 1.2$<br><br>-Posttest (control group): Mean $\pm$ SD = $7.0 \pm 1.2$ (P < 0.001)   | Cryotherapy can reduce the level of Arteriovenous pain.   | 3   |
| 6<br>Benin Sundar (2017) | Quasi-experimental design (pre-posttest)          | ni = 30;<br>nc = 30 | Control group = 23/7<br><br>Experimental group = 26/4         | Cryotherapy (Cold application was done with the ice cubes wrapped in gloves on the web between the thumb and index finger of the hand not having the AV fistula (contralateral arm). The procedure was started 5 min before the venipuncture and it was continued throughout the puncturing procedure.<br>TTI = 5 min | AVF puncture site pain/<br>Numerical pain rating scale | -Pretest (Control group): Mean $\pm$ SD = $5.5 \pm 1.8$<br><br>-Pretest (Experimental group): Mean $\pm$ SD = $5.7 \pm 2.0$<br>-Posttest (Control group): Mean $\pm$ SD = $5.6 \pm 1.6$<br>-Posttest (Experimental group): Mean $\pm$ SD = $3.9 \pm 1.8$  | Cryotherapy can reduce pain during puncture of AVF among patients of hemodialysis.  | 3   |
| 7<br>Golda et al (2016)  | Experimental study design with pre test-post test | ni = 30;<br>nc = 30 | Control group = 19/11<br><br>Experimental group = 20/10       | Apply ice cubes on the hegu point 10 min prior to the insertion of the catheter needle and which is continued while another staff performing AV fistula cannulation<br>TTI = 10 min   | AVF puncture pain/<br>numerical rating scale           | -Pretest (experimental group): Mean $\pm$ SD = $6.3 \pm 1.1$<br><br>-Posttest (experimental group): Mean $\pm$ SD = $1.5 \pm 0.7$<br>-Posttest (control group): Mean $\pm$ SD = $5.7 \pm 1.7$ (P = 0.01)  | The study finding reveals that the subjective pain scores were found to be significantly reduced within the experimental group by cold application. | 3   |
| 8<br>Arab et al (2017)   | Randomized Controlled Trial                       | ni = 35;<br>nc = 35 | lidocaine gel group = 20/15<br><br>Experimental group = 21/14 | lidocaine gel and ice massage<br>The ice massage began 10 min before the insertion of arteriovenous fistula needle and continued for about 2 min into the cannulation of the fistula on Hegu point LI-4 in the hand without fistula<br>TTI = 12 min   | AVF puncture-related pain/<br>Visual Analogue Scale    | -Pretest (Lidocaine gel 2 % group): Mean $\pm$ SD = $5.4 \pm 1.7$ , (CI:4.8- 6)<br><br>-Posttest (Lidocaine gel 2 % group): Mean $\pm$ SD = $4.5 \pm 1.5$ , (CI:4.03-5.1)<br>-Pretest (Hegu point ice massage group): Mean $\pm$ SD = $5.5 \pm 1.2$ , (CI:5.12-5.96)<br>-Posttest (Hegu point ice massage group): Mean $\pm$ SD = $4.1 \pm 1.4$ , (CI: 3.61-4.62) | Lidocaine gel and Hegu point ice massage affect the intensity of fistula puncture related pain in hemodialysis patients.                            | 3   |

RCT:1篇

實(類)驗型研究設計:3篇

Note: ni = Interventional group; nc = Control group; HD = Hemodialysis; AVF = Arteriovenous Fistula, TTI = Total Time of Intervention.



# Total up FAITH-步驟 2：系統性文獻回顧的品質如何(I)

## 【T】作者是否以表格和圖表「總結」(Total up) 試驗結果？

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。

## 【H】試驗的結果是否相近－異質性 (Heterogeneity) ？

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**。

P.6

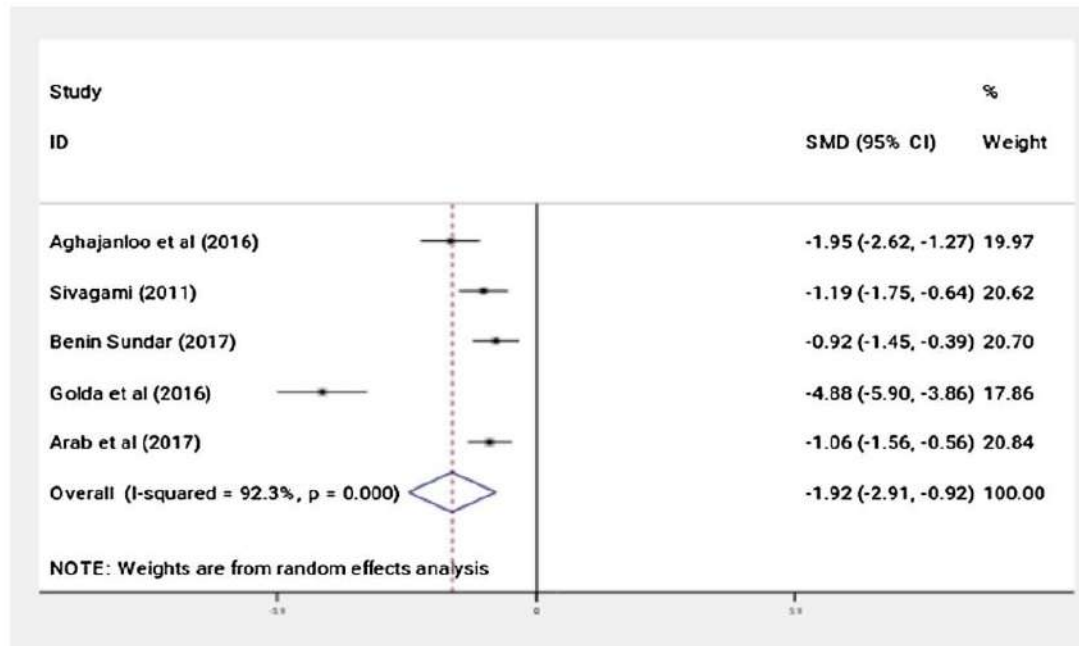


Fig. 2. Comparison the fistula puncture- related pain before and after intervention in experimental group.

Heterogeneity chi-squared = 52.28 (d.f. = 4)  $p < 0.001$ .

I-squared (variation in SMD attributable to heterogeneity) = 92.3 %.

## forest plot

- ✓ 5篇研究 (MD=-1.92, 95%CI -2.91 to -0.92,  $p < 0.001$ )
- ✓ 在介入冰敷改善穿刺疼痛前後的比較，統計結果上有顯著差異。
- ✓ 顯示：冰敷可降低疼痛感

評讀結果：●是○否  
○不清楚

# Total up

## FAITH-步驟 2：系統性文獻回顧的品質如何

### 【T】作者是否以表格和圖表「總結」(Total up) 試驗結果？

### 【H】試驗的結果是否相近—異質性 (Heterogeneity) ？

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。

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。

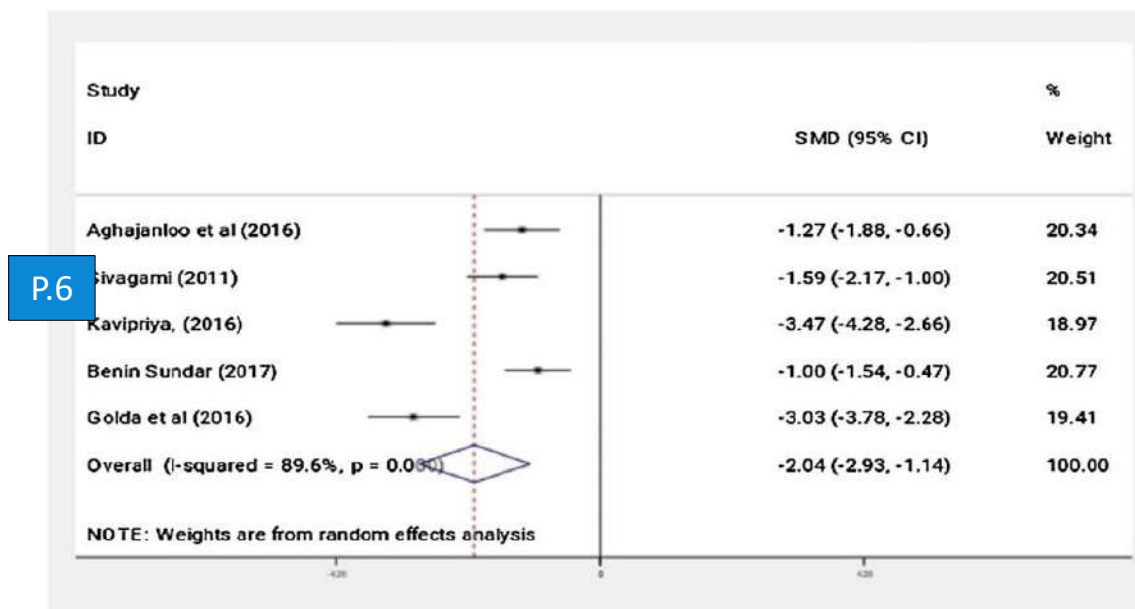


Fig. 3. Comparison the fistula puncture- related pain after intervention in experimental and control groups. Heterogeneity chi-squared = 38.63 (df. = 4)  $p < 0.001$ . I-squared (variation in SMD attributable to heterogeneity) = 89.6 %.

### forest plot

- ✓ 5篇研究 (MD=-2.04, 95%CI -2.93 to -1.14,  $p < 0.001$ )
- ✓ 冰敷與未冰敷進行瘻管穿刺疼痛感比較，統計結果上有顯著差異。
- ✓ 顯示：冰敷比未冰敷可降低瘻管穿刺的疼痛感

評讀結果：●是○否  
○不清楚

# Heterogeneity

FAITH-步驟 2：系統性文獻回顧的品質如何(I)

## 【H】 - 試驗的結果是否相近 - 異質性 (Heterogeneity) ?

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**。

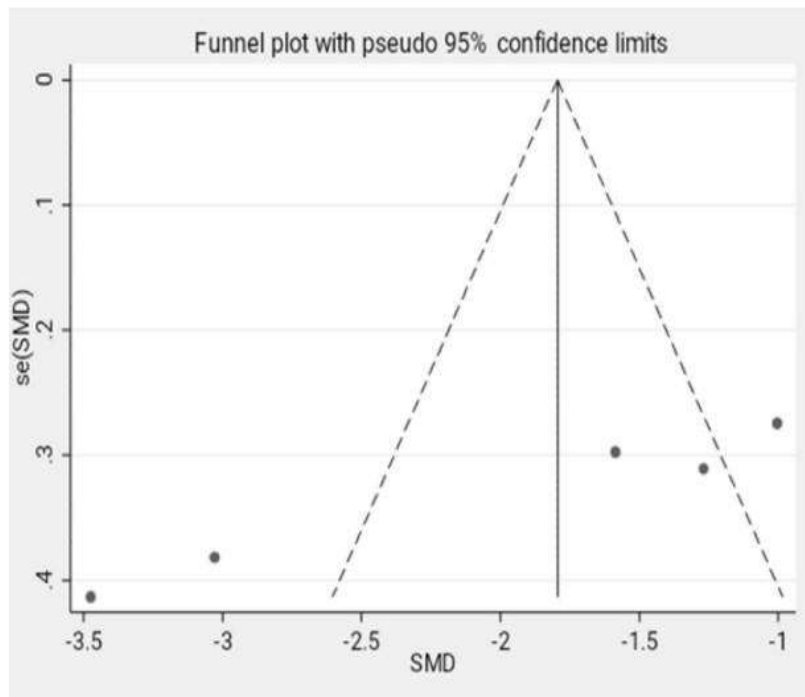


Fig. 4. Funnel plot to evaluate publication bias.

pain. Also, according to the results, studies were heterogeneous. To evaluate the publication bias according to the Begg's and Egger's statistical tests, and funnel plot, publication bias appears to exist for reasons such as studies with small effects and low sample size (Fig. 4).

Sensitivity analysis also showed that the contribution of each study to the overall estimate was approximately equal in terms of impact of each study.

P.3

✓ 研究存在出版偏差  
原因：研究效果較低、樣本量小等

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？         | 是    |
| 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    |



# Appraisal sheets(FAITH)

- Appraisal Tool

- [統合分析 Meta-analysis]

- 步驟1：研究探討的問題為何 (PICO)
    - 步驟2：研究的品質如何 (內在效度)
    - 步驟3：研究結果之意義為何 (效益)



## 步驟 3：結果為何？

### 3.2. Meta-analysis of outcome

P. 3

In the process of meta-analysis based on Random Effect Analysis, comparison of the results before and after the intervention in the experimental group (Fig. 2) showed that the standardized mean difference was  $-1.92$  (CI 95 %:  $-2.91, -0.92$ ), which means that the intervention could reduce the pain score to 1.92. According to the findings,

overall, applying cryotherapy intervention on reducing the fistula puncture-related pain was effective ( $p = 0.000$ ). Studies were not homogeneous ( $p = 0.000$ ). According to Fig. 3, during the comparison of the results of the studies between the experimental group and control group after the intervention, standardized mean difference was estimated to be  $-2.04$  (CI 95 %:  $-2.93, -1.14$ ). Overall, cryotherapy intervention on the fistula puncture-related pain was effective in the two groups after the intervention ( $p = 0.000$ ).

Comparison of the results of the reviewed studies in the control group (before and after the intervention in experimental group) showed that the standardized mean difference was estimated to be  $-0.11$  (CI 95 %:  $-0.41, 0.19$ ) ( $p = 0.513$ ). It means that the level of fistula puncture-related pain did not change. In the control group, no cryotherapy or other interventions were used. Also, according to the results, there was no heterogeneity between studies ( $p = 0.513$ ). Overall, the standardized mean difference for the reviewed studies between the two groups of experimental group and control group before the intervention was  $0.02$  (CI 95 %:  $-0.50, 0.53$ ) ( $p = 0.059$ ), indicating that the cryotherapy intervention had no effect on the fistula puncture-related pain. Also, according to the results, studies were heterogeneous. To evaluate the publication bias according to the Begg's and Egger's statistical tests, and funnel plot, publication bias appears to exist for reasons such as studies with small effects and low sample size (Fig. 4).

Sensitivity analysis also showed that the contribution of each study to the overall estimate was approximately equal in terms of impact of each study.

- ✓ 實驗組介入冰敷前後結果的比較顯示，標準化平均差為 $-1.92$  (CI 95 %:  $-2.91, -0.92$ )，顯示可以將疼痛評分降低到 1.92
- ✓ 在介入冰敷後實驗組和對照組的研究結果比較中，標準化平均差為 $-2.04$  (CI 95 %:  $-2.93, -1.14$ )。總體而言，介入冰敷後兩組對瘻管穿刺疼痛的改善是有效的( $p = 0.000$ )。





## 步驟 3：結果為何？

### 4. Discussion

Due to the negative effects of the arteriovenous fistula puncture-related pain on physical and mental health in hemodialysis patients, pain control is very important in these patients.<sup>14,15</sup> In this regard, researchers have used some non-pharmacological strategies such as self-selected soothing music,<sup>13</sup> EMLA anesthetic cream,<sup>19</sup> lavender aromatherapy,<sup>11</sup> and acupuncture<sup>20</sup> to decrease the arteriovenous fistula puncture-related pain in the studies that the results of their studies showed the positive effects of the mentioned strategies on reducing the level of pain. Also, Cryotherapy is one of the interventions used in several studies to alleviate the fistula puncture-related pain. Results obtained from several studies reported the positive effect of cryotherapy on reducing the fistula puncture-related pain but according to the results of the present review, changes in pain intensity in experimental group and control group after cryotherapy were different in the studies. The results of this study showed that in the study of Golda

needle into fistula. Although in the studies of Aghajanloo,<sup>20</sup> Arab<sup>10</sup> and Sivagami,<sup>30</sup> the duration of cryotherapy before the needle was inserted into fistula was also 10 min, in the studies by Aghajanloo<sup>26</sup> and Arab,<sup>10</sup> cryotherapy was also performed for about 2–3 min after the needle was inserted into fistula. Totally, maybe it can be said that the duration of cryotherapy before needle insertion is sufficient to increase the numbness caused by cryotherapy in the skin and to reduce pain, and it seems that the longer the cryotherapy before the needle insertion into fistula, the greater the effectiveness. Duration of cryotherapy in Sivagami's study<sup>30</sup> was also the same as the Golda's study,<sup>28</sup> but the difference in the age of most participants may be one of the possible reasons for the difference in pain intensity changes between Sivagami's study and Gold's study. Most of the participants in Golda's study were

- ✓ 冰敷療法對減少瘻管穿刺相關疼痛有積極效果。
- ✓ 進針前給予冰敷治療的時間越長，對降低瘻管穿刺疼痛的影響越大，進針前冰敷治療的時間越長，越足以增加冰敷治療對皮膚造成的麻木感，減輕疼痛。
- ✓ 進針前給予冰敷比進針後冰敷，止痛效果較佳。

# 結論



1. 冰敷療法可以降低疼痛引起的生理及心理的不愉快感。
2. 冰敷療法對減少瘻管穿刺相關疼痛的 **有積極的作用**。
3. 為一種**低風險且簡單**的方法，對減輕疼痛有效。
4. 於**上針前給予冰敷**（ 10 分鐘或更長時間 ），似乎比上針後冰敷更能有效減輕疼痛。

**冰敷療法 改善透析病人瘻管穿刺疼痛感**



# 限制

1. 僅使用波斯語和英語兩種語言進行搜索，限制更多文章的納入。
2. 每篇納入文章的樣本數（實驗組或對照組）25-31 名參與者及成效均小，也是本文的限制之一。
3. 因納入文章的篇數過少，因此於進一步meta -regression分析時，沒有實質的意義。



# 臨床應用.....

- ✓ 每次在洗腎病人開始穿刺瘻管前 10 分鐘開始冰敷，直到穿刺結束
- ✓ 限制:冬季不易執行
- ✓ 冰塊的取得容易嗎?:洗腎室有製冰機
- ✓ 除了合谷穴，是否有其它止痛的穴位可冰敷?



# 依系統性文獻回顧之結論



是否同意使用冰敷療法改善透析病人瘻管穿刺疼痛感？

同意

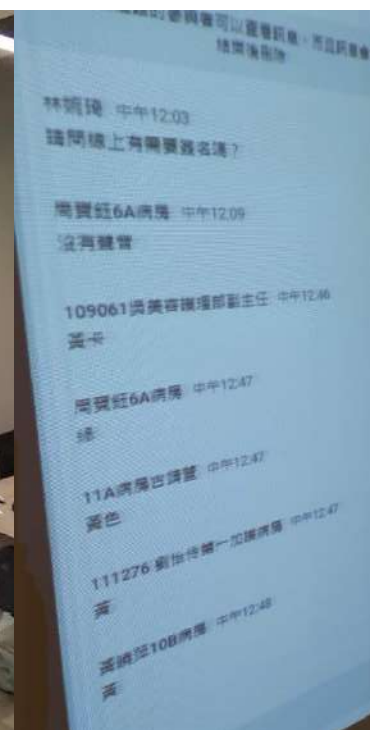
9人

尚有疑慮

9人

不同意

0人







# 感謝聆聽 恭請指教

