



實證醫學報告



三軍總醫院 放射診斷部
成員:林宗泰/黃鼎富



臨床情境

Clinical scenario

45歲的阿國身高不高(165公分)，一直有過重的情況(100kg)。最近在公司體檢中檢查出有高血壓(SBP/DBP 145/90 mmHg)跟糖尿病(空腹血糖 130g/dL)，還有膽固醇過高(Total Cholesterol 205mg/dL， LDL 140 mg/dL， TG 150mg/dL)的情況。醫生建議他可以從飲食控制跟運動著手，他看報紙說，吃蛋效果很好，可以減少心血管疾病。他想知道，真的是這樣嗎？



家屬考量的問題

膽固醇過高的病人，藉由吃蛋是否能減少心血管疾病？

有無其他治療建議呢？



背景資訊

Background knowledge

Egg Nutrition & Calories

1. Eggs are one of nature's most nutrient-dense foods. One egg contains 6g of protein and only 70 calories.
2. dietary cholesterol, like what's in eggs, has very little effect on your blood cholesterol levels.
3. According to the American Heart Association, lutein found in egg yolks also protects against the progress of early heart disease.

Nutrition Facts			
Per 1 large egg (53 g)			
Amount	% Daily Value		
Calories 70			
Fat 5 g			8 %
Saturated 1.5 g			8 %
+ trans 0 g			
Cholesterol 195 mg			
Sodium 65 mg			3 %
Carbohydrate 1 g			1 %
Fibre 0 g			0 %
Sugars 0 g			
Protein 6 g			
Vitamin A 10 %	Vitamin C		0 %
Calcium 2 %	Iron		6 %
Vitamin D 15 %	Vitamin E		15 %
Riboflavin 15 %	Niacin		8 %
Vitamin B ₁₂ 50 %	Folate		15 %



背景資訊

Background knowledge

The Power of Eggs

CANADIAN EGGS
Canadian eggs are fresh, local and high quality.

ACCORDING TO
Canada's Food Guide

2 eggs = 1 serving
(From the Meats and Alternatives food group)

1 large egg = 70 calories
5 grams of fat


A large egg provides **6 grams** of high-quality protein, which helps build antibodies and repair muscles.

50% of your daily requirement of vitamin B12, which helps protect against heart disease.

Eggs provide 14 important nutrients such as **vitamins A, D and E, folate, iron, zinc and choline**—eating eggs is good for your bones, teeth, skin and eyes.

DON'T SKIP THE YOLK!
Most of the egg's nutrition is in the yolk, including half the protein.

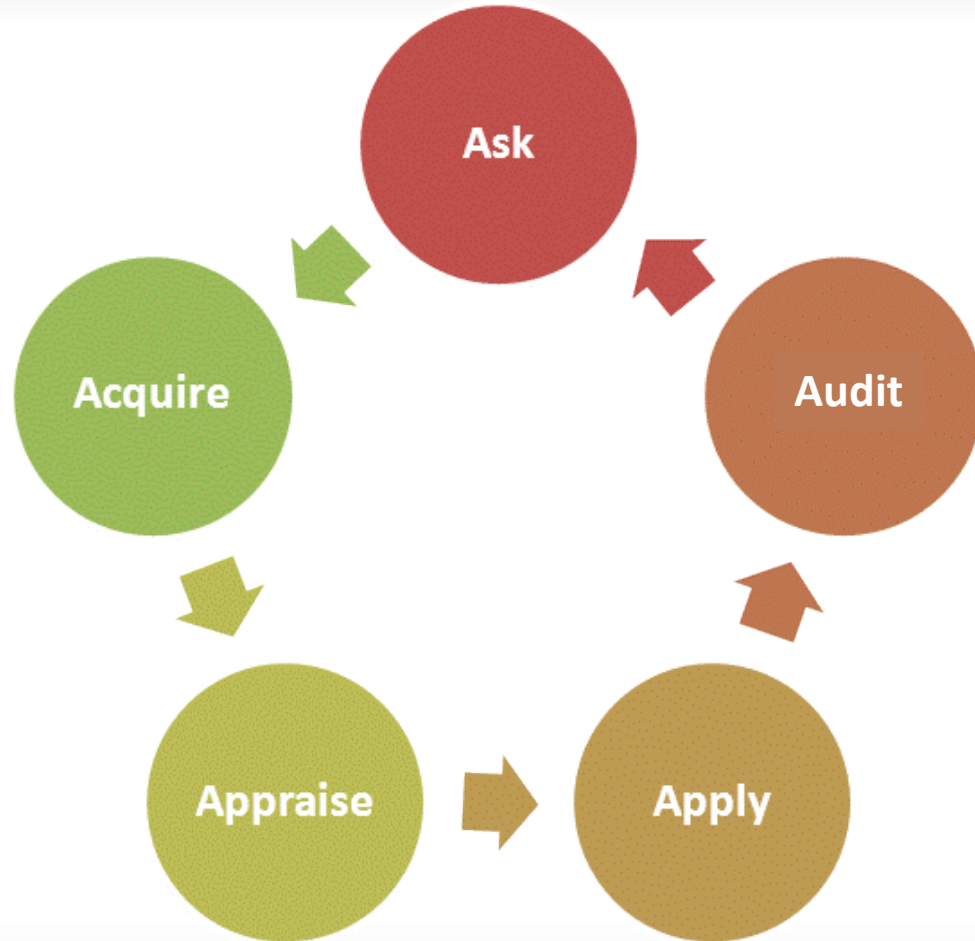
White and brown eggs have the **SAME NUTRITIONAL VALUE**

Want to know more about egg nutrition? aneggadayisok.ca  Eggs. Natural Goodness.



實證醫學五大步驟

Evidence based practice cycle





臨床問題 Clinical question

前景問題
問一個特定而專一的問題

膽固醇過高的病人，藉由吃蛋是否能減少心血管疾病發生機會？

P 病人或病患族群	膽固醇過高的病人	Patient with cardiovascular disease
I 介入或暴露	吃蛋	Egg consumption
C 對照的介入或暴露	除了吃蛋以外的其他治療方式	Treatments other than egg consumption
O 結果	減少心血管疾病	Reduce cardiovascular disease

這是一個：治療型 傷害型 診斷型 預後型問題
最適合回答此問題的研究設計：**系統性回顧**/統合分析



臨床問題 Clinical question

前景問題
問一個特定而專一的問題

膽固醇過高的病人，藉由吃魚油是否能減少心血管疾病發生機會？

P	病人或病患族群	膽固醇過高的病人	Patient with cardiovascular disease
I	介入或暴露	吃魚油	Fish oil consumption
C	對照的介入或暴露	運動	Exercise
O	結果	減少心血管疾病	Reduce cardiovascular disease

這是一個：治療型 傷害型 診斷型 預後型問題
最適合回答此問題的研究設計：**系統性回顧**/統合分析



設定搜尋策略

使用關鍵字 (MeSH term) 及同義詞搜尋

Natural language processing

Synonym/MeSH



Patient with cardiovascular disease

Patient with CVD



Eating egg

Egg consumption



Treatments other than egg consumption

Treatments other than egg consumption



Reduce cardiovascular disease

Outcome, cardiovascular disease



設定搜尋策略

依循6S模式，輸入「P & I」搜尋，調整關鍵字與同義字

Summaries ★★★★★

UpToDate
DynaMed
Best Practice
Stat!Ref Smart Medicine

Synopses of Syntheses ★★★★★

EMBase
DARE

Syntheses ★★★★★

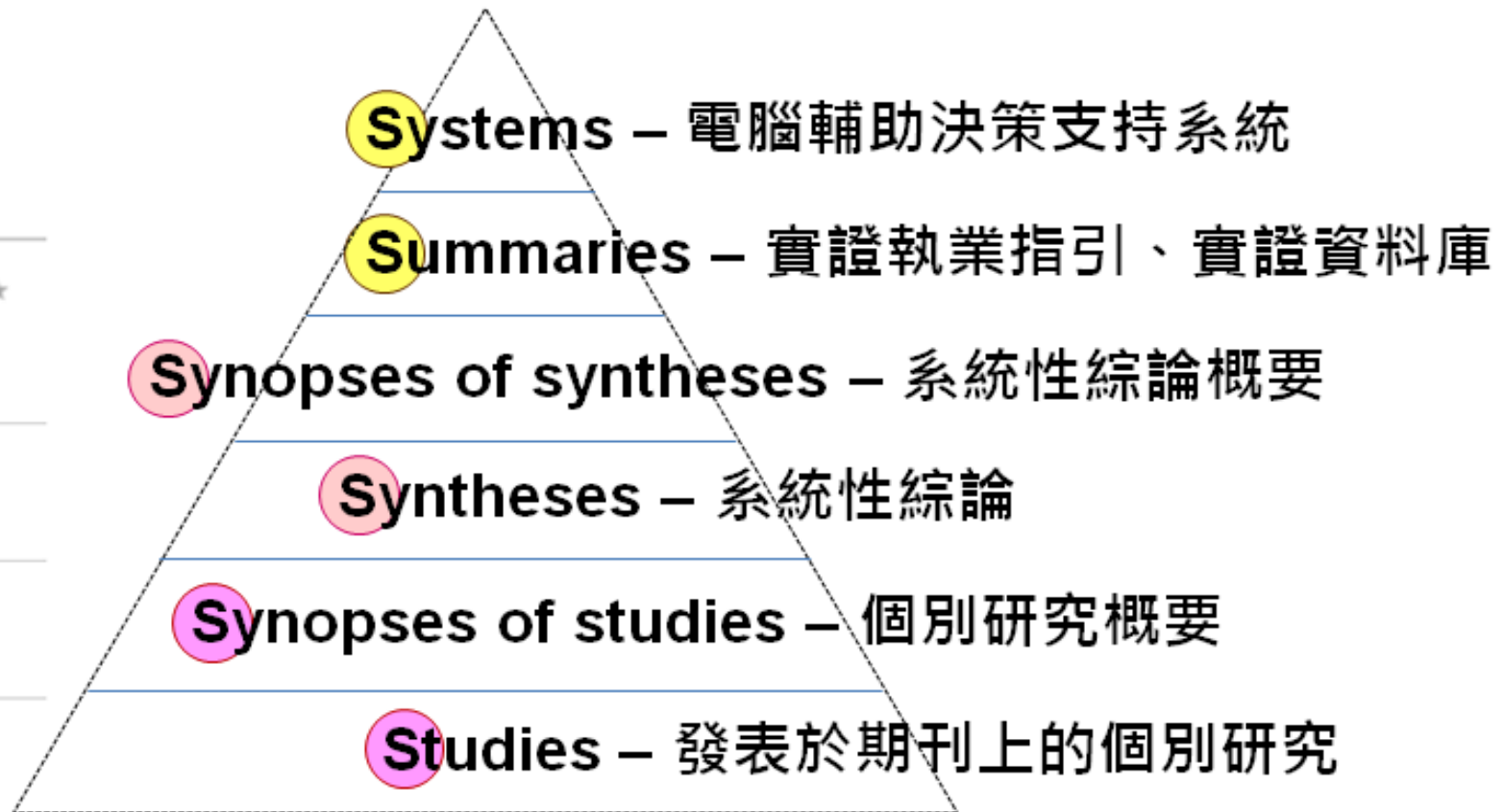
Cochrane

Synopses of Studies ★★★★★

ACP Journal Club (via PLUS)

Studies ★★★★★

Pubmed





資料搜尋 EMBASE

Embase®

Search Entree Journals **Results** My tools Register Login (1) ? ☰

關鍵字

'egg consumption':ab,ti AND 'cardiovascular disease':ab,ti AND [2013-2018]/py

Search > Mapping Date Sources Fields

egg consumption AND cardiovascular disease

Results Filters

+ Expand - Collapse all Apply >

Sources

Drugs

Diseases

Devices

Floating Subheadings

Age

Gender

Study types

Publication types

Journal titles

Publication years

Authors

Conference Abstracts

History	Results	Count
<input type="checkbox"/> #4	'egg consumption':ab,ti AND 'cardiovascular disease':ab,ti AND [2013-2018]/py	35
<input type="checkbox"/> #3	'egg consumption':ab,ti AND 'cardiovascular disease':ab,ti	58
<input type="checkbox"/> #2	'egg consumption':ab,ti AND 'cardiovascular disease':ab,ti	58
<input type="checkbox"/> #1	'egg consumption cardiovascular disease' OR (('egg'/exp OR egg) AND ('cardiovascular'/exp OR cardiovascular) AND ('disease'/exp OR disease))	

35 results for search #4

搜到35篇, 有些無全文, 或提及的況狀不符合我們的PICO

Select number of items Selected: 0 (clear) Show all abstracts

Results View | Print | Export | Email | Order | Add to Clipboard

1 Longitudinal association between egg consumption and the risk of cardiovascular disease: Interaction with type 2 diabetes mellitus
Jang J., Shin M.-J., Kim O.Y., Park K.
Nutrition and Diabetes 2018 8:1 Article Number 20 Cited by: 0
Embase Abstract Index Terms View Full Text Similar records >

2 Associations of egg consumption with cardiovascular disease in a cohort study of 0.5 million Chinese adults
Qin C., Lv J., Guo Y., Bian Z., Si J., Yang L., Chen Y., Zhou Y., Zhang H., Liu J., Chen J., Chen Z., Yu C., Li L.
Heart 2018 104:21 (1756-1763) Cited by: 4
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2014

to

2018

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Trials
33

Editorial
0

Reviews

Year: Custom year range

27 Trials matching on 'Egg Consumption AND cardiovascular disease in Title Abstract Keyword'

Cochrane Central Register of Controlled Trials

Issue 11 of 12, November 2018

Select all (27) Export selected citation(s)

Order by Relevancy

1

Eggs as Part of a Healthy Breakfast

NCT02297464

Https://clinicaltrials.gov/show/nct02297464, 2014 | added to CENTRAL: 31 May 2018 | 2018 Issue 5

2

An Egg Based Breakfast Maintains Flexibility in Older Adults

NCT03164200

Https://clinicaltrials.gov/show/nct03164200, 2017 | added to CENTRAL: 31 May 2018 | 2018 Issue 5

Egg consumption,
CVD

搜到27篇

Results per page 25



資料搜尋 PubMed

PubMed.gov

PubMed

egg consumption AND cardiovascular disease

Search

US National Library of
Medicine National Institutes
of Health

Create RSS Create alert Advanced

Article types
Clinical Trial
Review
Customize ...

Format: Summary Sort by: Most Recent Per page: 20

Best matches for egg consumption AND cardiovascular disease:

[Egg consumption and cardiovascular disease according to diabetic status: The P study.](#)

Díez-Espino J et al. Clin Nutr. (2017)

[Association between egg consumption and cardiovascular disease events, diabetes and all-cause mortality.](#)

Guo J et al. Eur J Nutr. (2017)

[Egg consumption in relation to risk of cardiovascular disease and diabetes: and meta-analysis.](#)

Shin JY et al. Am J Clin Nutr. (2013)

Switch to our new best match sort order

egg consumption AND
cardiovascular disease

Text availability
Abstract
Free full text
Full text

Publication dates
5 years
10 years
Custom range...

Species
Humans
Other Animals

[Clear all](#)

[Show additional filters](#)

Search results

Items: 1 to 20 of 140

<< First < Prev Page 1 of 7 Next > Last >>

- [Cardiovascular benefit of egg consumption is most unlikely.](#)
 - Spence JD, Jenkins D. Heart. 2018 Nov;104(21):1805-1806. doi: 10.1136/heartjnl-2018-313687. No abstract available. PMID: 30309867 [Similar articles](#)

- [Healthy dietary pattern with daily egg consumption might be the true factor associated with decreased risks of cardiovascular diseases and mortality.](#)
 -

Results by year

Titles with your search

[Egg consumption and ca according to diabetic status](#)

[Egg consumption and ca among diabe \[Diabetes Me](#)

[Egg consumption in relati cardiovascular disease a](#)

Find related data

Database:

使用原始搜尋策略共搜到140篇



資料搜尋 PubMed

搜尋策略

增加搜尋限制：年份、種類

搜尋到36篇, 其中3篇符合PICO

PubMed.gov

PubMed

egg consumption AND cardiovascular disease

US National Library of
Medicine National Institutes
of Health

Create RSS Create alert Advanced

Article types

Format: Summary Sort by: Most Recent Per page: 20

Send to

Clinical Trial
Review
Customize

Best matches for egg consumption AND cardiovascular disease:

[Egg consumption and cardiovascular disease according to diabetic status: The PREDIMED](#)

by
Z-Espino J et al.

[Association between egg consumption and all-cause mortality.](#)

Guo J et al. Eur J Nutr. (2017)

[Egg consumption in relation to risk of cardiovascular disease and diabetes: a systematic review and meta-analysis.](#)

Shin JY et al. Am J Clin Nutr. (2013)

Switch to our new best match sort order

Full text

Publication dates

5 years

10 years

Custom range...

Species

Humans

Other Animals

[Clear all](#)

[Show additional filters](#)

Search results

Items: 1 to 20 of 36

<< First < Prev Page 1 of 2 Next > Last >>

i Filters activated: published in the last 5 years, Humans. [Clear all](#) to show 140 items.

[Intake of 3 Eggs per Day When Compared to a Choline Bitartrate Supplement, Downregulates](#)

1. [Cholesterol Synthesis without Changing the LDL/HDL Ratio.](#)

Lemos BS, Medina-Vera I, Blesso CN, Fernandez ML.

Nutrients. 2018 Feb 24;10(2). pii: E258. doi: 10.3390/nu10020258.

PMID: 29495288 [Free PMC Article](#)

[Similar articles](#)

[Egg Consumption and Cardiovascular Risk.](#)

2. Spence JD.



搜尋結果

文獻
篇數

**EMBase
(35)**

**Cochrane
(27)**

**Pubmed
(36)**

排除條件:和PICO不符合

符合
PICO
篇數

**EMBase
(0)**

**Cochrane
(0)**

**Pubmed
(3)**



搜尋結果



- [Egg consumption and the risk of cardiovascular disease and all-cause mortality: Guangzhou Biobank Cohort Study and meta-analyses.](#)
5. Xu L, Lam TH, Jiang CQ, Zhang WS, Zhu F, Jin YL, Woo J, Cheng KK, Thomas GN.
Eur J Nutr. 2018 Apr 21. doi: 10.1007/s00394-018-1692-3. [Epub ahead of print]
PMID: 29680985
[Similar articles](#)
- [Meta-analysis of Egg Consumption and Risk of Coronary Heart Disease and Stroke.](#)
12. Alexander DD, Miller PE, Vargas AJ, Weed DL, Cohen SS.
J Am Coll Nutr. 2016 Nov-Dec;35(8):704-716. Epub 2016 Oct 6. Review.
PMID: 27710205
[Similar articles](#)
- [Impact of Egg Consumption on Cardiovascular Risk Factors in Individuals with Type 2 Diabetes and at Risk for Developing Diabetes: A Systematic Review of Randomized Nutritional Intervention Studies.](#)
22. Richard C, Cristall L, Fleming E, Lewis ED, Ricupero M, Jacobs RL, Field CJ.
Can J Diabetes. 2017 Aug;41(4):453-463. doi: 10.1016/j.jcjd.2016.12.002. Epub 2017 Mar 27. Review.
PMID: 28359773
[Similar articles](#)



搜尋結果



Journal of the American College of Nutrition



ISSN: 0731-5724 (Print) 1541-1087 (Online) Journal homepage: <http://www.tandfonline.com/loi/uacn20>

Meta-analysis of Egg Consumption and Risk of Coronary Heart Disease and Stroke

Dominik D. Alexander, Paula E. Miller, Ashley J. Vargas, Douglas L. Weed & Sarah S. Cohen

這篇文獻「納入理由」

- 最符合PICO
- 研究設計可以回答臨床問題
- 納入樣本數最多
- 年份較新(2016)
- 有全文可供評讀



評讀工具

Critical appraisal worksheets

Critical
Appraisal
Skills
Programme



Critical Appraisal Skills Programme (CASP)

Making sense of evidence

我們挑選 **CASP** 中 **SR** 的評讀工具



CASP Systematic Review Checklist

CASP Qualitative Checklist

CASP Randomised Controlled Trial Checklist

CASP Case Control Checklist

CASP Diagnostic Checklist

CASP Cohort Study Checklist

CASP Economic Evaluation Checklist

CASP Clinical Prediction Rule Checklist



1. Did the review address a clearly focused question?



此文章是否問了一個清楚明確的問題？

This paper: Yes No Unclear

Comment:

The possible relationship between dietary cholesterol and cardiac outcomes has been scrutinized for decades. However, recent reviews of the literature have suggested that dietary cholesterol is not a nutrient of concern. Thus, we conducted a meta-analysis of egg intake (a significant contributor to dietary cholesterol) and risk of coronary heart disease (CHD) and stroke. A comprehensive literature search was conducted through August 2015 to identify

這篇文章用統合分析的方式，去評讀有關每天攝取蛋與冠狀動脈疾病及中風關係的文獻，符合我們的PICO。



2. Did the authors look for the right type of papers?

作者是否收納適當的研究類型？

This paper: Yes No Unclear

Comment:

Systematic literature searches in the PubMed bibliographic database were performed to identify articles on egg consumption and cardiovascular disease endpoints (focusing on CHD) and stroke. Searches were conducted through August 2015.

Supplementary literature searches included searching EMBASE and screening reference lists from all relevant studies, review articles, meta-analyses, and Cochrane Collaboration reports. In particular, we reviewed the references included

To be included in the meta-analysis, a published study had to meet the following criteria: (1) prospective design; (2) analyzed adult human populations; (3) published in the English language; and (4) provided risk estimates and measures of variance (i.e., 95% CIs) for egg intake and cardiovascular outcomes including CHD or stroke. Our study identification

從三大資料庫收納從1982到2014年的研究，經流程共收錄20篇，因此答案為是。



3. Do you think all the important, relevant studies were included?

作者是否收納了所有重要、相關的研究？

This paper: Yes No Unclear

Comment:

The searches combined **MESH terms** (dietary cholesterol, coronary heart disease, ischemic heart disease, coronary artery disease, myocardial infarction, heart failure, cerebrovascular disorder, stroke, cardiovascular disease) with text terms (eggs, egg consumption, egg intake, cholesterol, and dietary cholesterol). Supplementary literature searches included searching

此文章並無提到原收納幾篇文章，以及經篩選流程後剩幾篇，沒有漏斗圖去排除出版誤差，但有提到本文收納及排除原則，且本文有提供搜尋之MeSH，因此答案為Unclear。



4. Did the review's authors do enough to assess the quality of the included studies?

作者是否適當地評估收納研究的品質？

This paper: Yes No Unclear

Comment:

tion reports. In particular, we reviewed the references included in the recent meta-analysis by Shin and colleagues [12]. All search results were screened by 2 researchers, with no discrepancies between reviewers.

sis (Supplemental Fig. 1). Case-control, cross-sectional, ecologic and experimental animal studies, case reports, case series, commentaries, and letters to the editor were excluded.

有兩位專家獨立評讀，排除動物研究、個案報告、非英文語系。因此答案為YES。



5. If the results of the review have been combined, was it reasonable to do so?

作者把各研究的結果合併起來是合理的嗎？

This paper: Yes No Unclear

Comment:

Seven studies [11,113,17,29–32] were included in the meta-analysis of egg intake and stroke (Fig. 1), and 7 studies [11,15,17,18,29,31,33] were included in the meta-analyses for CHD (Fig. 2). Descriptive characteristics of these studies are sum-

收納的研究彼此間的雖然有些差異: 不同的族群、不同蛋攝取量，但結果都是討論心血管疾病以及中風的風險，因此答案為**YES**。



這篇回顧呈現了什麼結果？

討論處理CDH的六種面向
我們PICO聚焦在第二點

6. What are the overall results of the review?

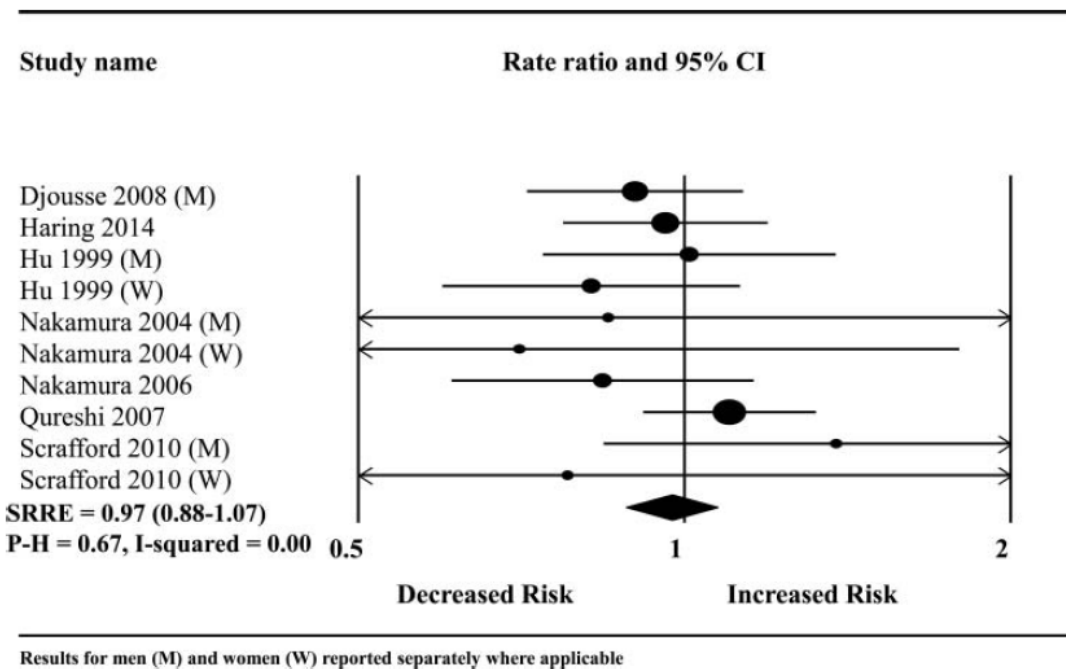


Fig. 2. Meta-analysis of egg consumption and coronary heart disease.

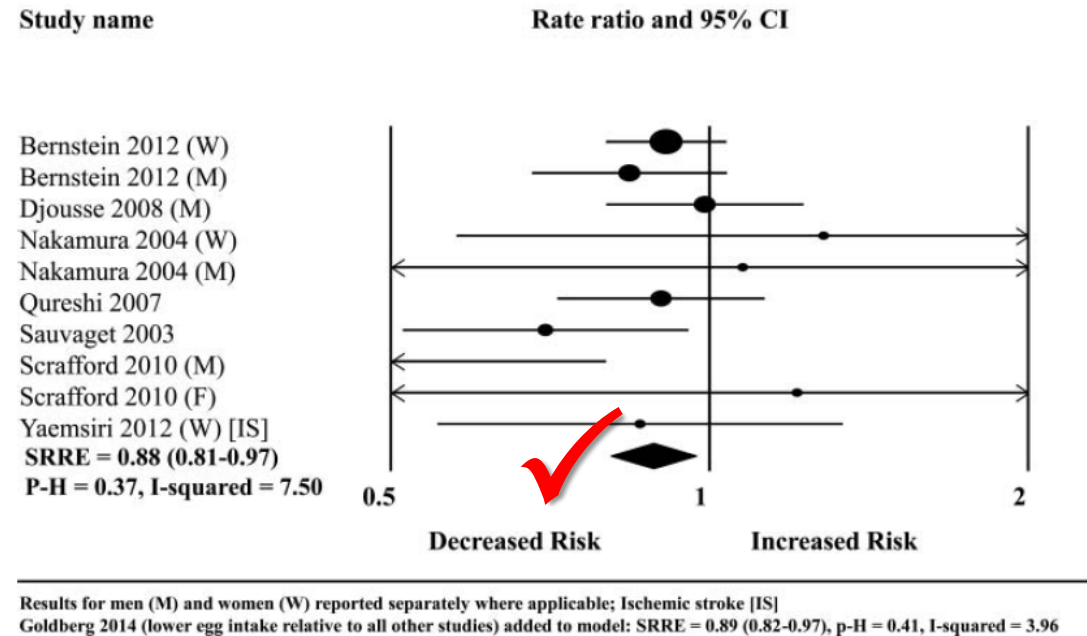


Fig. 1. Meta-analysis of egg consumption and stroke.



7. How precise are the results?

這個結果精確嗎？

This paper: Yes No Unclear

Comment:

In the meta-analysis of high vs low egg intake (generally 1 egg/d vs <2 eggs/wk), a statistically significant 12% decreased risk of stroke was observed (SRRE D 0.88, 95% CI, 0.81–0.97, p-H D 0.37, I2 D 7.50; Table 2, Fig. 1)

Meta-analysis of 7 studies of egg consumption and CHD resulted in an SRRE of 0.97 (95% CI, 0.88–1.07, p-H D 0.67, I2 D 0.00; high vs low intake; Table 2, Fig. 2). There was no evidence of publication bias based on visual inspection of the funnel plot of standard error by log rate ratio.

統合後的信賴區間上下界值差15-20%，算是精確 (<25~50%)。



8. Can the results be applied to the local population?

此文章是否可應用到你的病患？

This paper: Yes No Unclear

Comment:

本篇收錄研究的個案男性跟女性比例差不多，也探討中風以及心血管的風險，族群相似度尚可，但缺乏性別比例，此部分稍嫌不足。



9. Were all important outcomes considered?

是否所有重要的臨床結果都被考量到？

This paper: Yes

No

Unclear

Comment:

Model	Studies (n)	SRRE (95% CI)
Stroke		
Total stroke	7	0.88 (0.81–0.97)
Studies conducted in the United States	5	0.90 (0.82–0.99)
Studies conducted in Japan	2	0.82 (0.58–1.18)
Men	4	0.85 (0.65–1.11)
Women	4	0.92 (0.81–1.04)
Ischemic stroke	4	0.92 (0.82–1.02)
Hemorrhagic stroke	2	0.85 (0.56–1.28)
Fatal stroke	4	0.78 (0.52–1.19)
0–1 serving per week	6*	0.87 (0.79–0.96)
> 1 to 3.5 servings per week	13*	0.90 (0.86–0.95)
> 3.5 to <7 servings per week	6*	0.91 (0.80–1.04)
7+ servings per week	7*	0.92 (0.78–1.08)
Coronary heart disease		
Total CHD	7	0.97 (0.88–1.07)
Studies conducted in the United States	5	0.99 (0.90–1.10)
Studies conducted in Japan	2	0.83 (0.61–1.11)
Men	4	0.98 (0.83–1.17)
Women	3	0.81 (0.60–1.08)
Fatal CHD	2	1.10 (0.75–1.63)
0–1 serving per week	8*	0.95 (0.85–1.05)
> 1 to 3.5 servings per week	12*	0.89 (0.77–1.02)
> 3.5 to <7 servings per week	6*	1.03 (0.90–1.18)
7+ servings per week	9*	0.99 (0.89–1.09)



10. Are the benefits worth the harms and costs?

這些好處隨之而來的傷害和花費是否值得？

This paper: Yes No Unclear

Comment:

Eggs are a relatively low-cost and nutrient-dense whole food that provides a valuable source of protein, essential fatty acids, antioxidants, choline, vitamins, and minerals.

成比效益評估：成本較低



用病人能理解的語文建議

阿國您好：

我們團隊查閱最新的文獻，針對您高血壓、糖尿病和膽固醇過高的狀況，目前證據顯示**每天吃一顆蛋對於減少心血管疾病發現並無明顯益處**，但每天吃一顆蛋可稍降低中風的機會。所以我們團隊建議您一天可以吃一顆蛋，以降低中風的機率，並搭配飲食控制和運動作為改善您本身的狀況，來有效的控制體重。



**THANKS FOR
YOUR ATTENTION**

