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REVIEW



Effect of earplugs and eye masks on the sleep quality of intensive care unit patients: A systematic review and meta-analysis



引言人:

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報告日期:111年08月30日

[Journal Club]

目錄

- ●ICU臨床情境
- ●提出問題(Ask)
- ●搜尋證據(Acquire)
- ●嚴格評讀(Appraisal)







ICU臨床情境



ICU臨床情境



小姐! 我睡不著,這裡好吵!!

這裡好亮! 我不好睡!







提出問題(ASK)



提出問題(Ask)





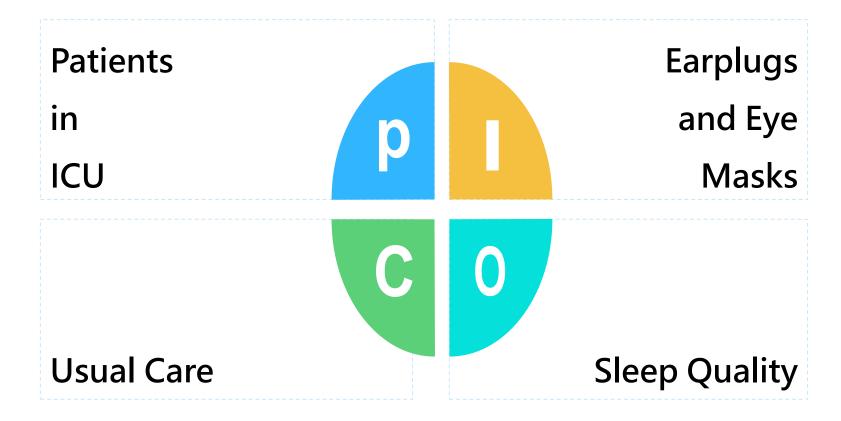


提出問題 (Ask)

搜尋證據 (Acquire) 嚴格評讀 (Appraisal) 恰當運用 (Apply)



提出問題(Ask)



提出問題 (Ask)





搜尋證據(ACQUIRE)



搜尋證據(Acquire)

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REVIEW



Effect of earplugs and eye masks on the sleep quality of intensive care unit patients: A systematic review and meta-analysis

Chiu-Shu Fang¹ | Hsiu-Hung Wang¹ | Ruey-Hsia Wang^{1,2} | Fan-Hao Chou¹ | Shih-Lun Chang^{3,4} | Ching-Ju Fang⁵

提出問題 **搜尋證據** 嚴格評讀 恰當運用 衡量結果 (Ask) (Acquire) (Appraisal) (Apply) (Audit)





嚴格評讀(APPRAISAL)



FAITH快速評讀

系統性文獻回顧(systematic review)



F-Find · A-Appraisal · I-Included · T-Total up · H-Heterogeneity



研究結論

提出問題 (Ask) 搜尋證據 (Acquire) 嚴格評讀 (Appraisal) 恰當運用 (Apply)





▶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**二個主要資料庫**並加上 文獻引用索引
- 進行文獻搜尋應使用
 MeSH字串及一般檢索詞
 彙(text words)
- 盡可能使用**布林邏輯(OR)** 組合各種搜尋詞及同義字

2.3 | Search methods— MILEY 4323

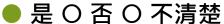
The Embase, MEDLINE Complete (EBSCOhost), Cochrane Library, CINAHL Plus with Full Text (EBSCOhost), and Index to Taiwan Periodical Literature System databases were searched for studies published from the establishment of each database to May 5, 2020. Results were subsequently saved in the Endnote X9 citation manager. The controlled vocabulary (MeSH) and text words combined four main concepts (earplugs, eye masks, ICU and sleep) of keywords by Boolean operators, AND (critically ill OR critical care OR intensive care OR coronary care unit OR respiratory care unit OR intensive treatment unit OR intensive therapy unit) AND (earplugs OR ear protective device OR noise reduction OR earmuff) OR (eye mask OR eyewear OR eye shield OR light reduction OR eye protective devices) AND (sleep OR night OR sleep disorder OR circadian OR circadian rhythm). All related studies were identified and scanned. The results were saved to Endnote X9 citation manager. Full details of the database search strategy deployed in this study are listed in Appendix S1.

> 嚴格評讀 (Appraisal) (Apply)

衡量結果 (Audit)

Mav





▶F - 研究是否找到 (Find) 所有的相關證據?

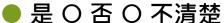
- 納入條件:
- 1) 研究設計為隨機對照試驗 (RCTs)
- 2) 在介入措施中單獨使用眼罩、耳塞或合併使用
- 3) 受試者皆為大於18歲之 重症病人
- 4) 可自行記錄睡眠品質
- 5) 同時搜尋英文及中文文獻

The inclusion criteria of this study were as follows: (a) The studies utilized randomized controlled trials (RCTs) including 2-arm cross-over trials; (b) Earplugs and/or eye masks were the intervention; (c) Study subjects were over 18 years old and admitted to an intensive care unit; (d) Self-reported sleep quality was the primary outcome; (e) Both English and Chinese studies were language peer-reviewed. The exclusion criteria were as follows: (a) animal or laboratory research, (b) duplicate studies derived from the same research data and (c) literature reviews or

提出問題 (Ask)

搜要證據 (Acquire) 嚴格評讀 (Appraisal) 恰當運用 (Apply)





- ▶F 研究是否找到 (Find) 所有的相關證據?
- 排除條件:
- 1) 動物或者是實驗室研究
- 2) 來自相同數據的重複研究
- 3) 類型為文獻探討或案例分析

The inclusion criteria of this study were as follows: (a) The studies utilized randomized controlled trials (RCTs) including 2-arm cross-over trials; (b) Earplugs and/or eye masks were the intervention; (c) Study subjects were over 18 years old and admitted to an intensive care unit; (d) Self-reported sleep quality was the primary outcome; (e) Both English and Chinese studies were language peer-reviewed. The exclusion criteria were as follows: (a) animal or laboratory research, (b) duplicate studies derived from the same research data and (c) literature reviews or case studies.



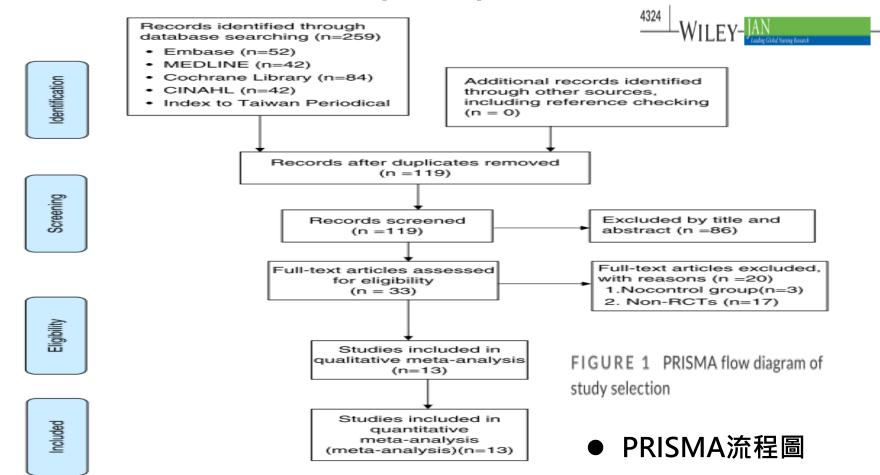
搜尋證據 (Acquire) 嚴格評讀 (Appraisal)

恰當運用 (Apply)





▶F - 研究是否找到 (Find) 所有的相關證據?



評讀結果

● 是 ○ 否 ○ 不清楚

嚴格評讀(Appraisal)

▶A - 文獻是否經過嚴格評讀(Appraisal)?

2.5 | Quality appraisal

The quality of each article included in the study was assessed independently by two reviewers using Cochrane Collaboration's risk of bias tool for systematic reviews of interventions version (v. 5.2.0). Assessment items included selection bias, performance bias, detection bias, attrition bias and reporting bias. Each assessment item was scored as + (representing a low risk of bias), '?' (representing an unclear risk of bias), or '-' (representing a high risk of bias) (Higgins et al., 2017). If the assessment did not reach a consensus on each item, other members of the research team would be invited to resolve the conflict.

2.6 | Data abstraction

Two reviewers independently reviewed and extracted the original data of the 13 studies. When they could not reach a consensus, a third reviewer would engage to resolve the disagreement. Characteristics and results of the studies were extracted in terms of the author, year of publication, the nationality of participants, setting, study design, number of participants and details of intervention measures (characteristics, duration, measurement time point, etc.), measurement tools and main findings. A separate table was used to record the raw outcome (e.g. mean and standard deviation [SD]) of each study.



The Cochrane Collaboration's risk of bias tool for systematic reviews of interventions version (v. 5.2.0)

兩位reviewer審視搜尋之文獻若出現意見不一致會由第三位進行判斷,並使用表格呈現研究結果

是出問題 搜尋詞 (Ask) (Acqu

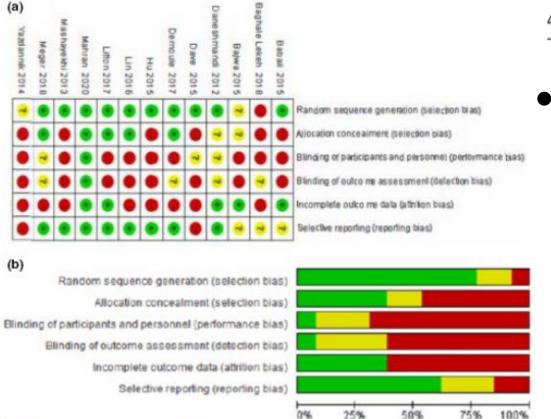
嚴格評讀 (Appraisal)

恰當運用 (Apply)





▶I - 是否只納入(Included)具良好效度的文章?





The Cochrane Collaboration's risk of bias tool for systematic reviews of interventions version (v. 5.2.0)

FIGURE 2 Risk of bias assessment: review authors' judgments about each risk of bias item, presented as percentage of include studies. (a) Risk of bias summary. (b) Risk of bias graph

Unclear risk of bias

High risk of bias

100%

Low risk of bias



TABLE 1 Design characteristics and outcomes of studies

	Participants/Intervention				
Setting/Study design	characteristics	Duration	Measurement time point	Measurement tools	Main findings
CCU/Two-group controlled clinical trial	E: eye masks (n = 30) C: ATU (n = 30)	1 night (2nd night)	The day after intervention	Pittsburgh Sleep Quality Index	Significant intervention effect was found for sleep quality
CCU/Crossover design	E: eye masks (n = 30) C: ATU (n = 30)	1 night	Not described	Verran and Snyder- Halpern sleep scale	Significant intervention effect was found for sleep quality
ICU/Crossover design Clinical trial, (post-test)	Earplugs + eye masks E1: 1st (n = 25), E2: 2nd (n = 25) C: ATU	1 night (10 PM-morning)	The day after intervention (9 AM)	Verran and Snyder- Halpern sleep scale	Significant intervention effect was found for sleep quality
CCU/RCT (non-blind)	E: eye masks (n = 30) C: ATU (n = 30)	3 nights (10 PM-6AM)	The morning after intervention (7 AM)	Pittsburgh Sleep Quality Index	Significant intervention effect was found for sleep quality, sleep fragmentation, sleep latency, sleep length, and sleep supplementation
ICU/RCT	E: earplugs+eye masks (n = 50) C: ATU (n = 50)	2 nights (2nd, 3rd night)	On 3rd day	Verran and Snyder- Halpern sleep scale	Significant intervention effect was found for sleep quality
ICU/RCT Crossover design	E: earplugs+eye mask (n = 25) C: ATU (n = 25)	1 night (9 PM-6 AM) (2 nd night)	Not described	Richard Campbell Sleep Questionnaire	Highly significant intervention effect was found for sleep quality Noise and light were major sleep disturbing factors
	clinical trial CCU/Crossover design ICU/Crossover design Clinical trial, (post-test) CCU/RCT (non-blind) ICU/RCT	clinical trial C: ATU (n = 30) CCU/Crossover design C: ATU (n = 30) C: ATU (n = 30) ICU/Crossover design Clinical trial, (post-test) Earplugs + eye masks E1: 1st (n = 25), E2: 2nd (n = 25) C: ATU CCU/RCT (non-blind) E: eye masks (n = 30) C: ATU (n = 30) ICU/RCT E: earplugs+eye masks (n = 50) C: ATU (n = 50) ICU/RCT E: earplugs+eye mask (n = 25)	clinical trialC: ATU ($n = 30$)CCU/Crossover designE: eye masks ($n = 30$) C: ATU ($n = 30$)1 night 1 nightICU/Crossover design Clinical trial, (post-test)Earplugs + eye masks E1: 1st ($n = 25$), E2: 2nd ($n = 25$) C: ATU1 night (10 PM-morning)CCU/RCT (non-blind)E: eye masks ($n = 30$) C: ATU ($n = 30$)3 nights (10 PM-6AM)ICU/RCTE: earplugs+eye masks ($n = 50$) C: ATU ($n = 50$)2 nights (2nd, 3rd night)ICU/RCTE: earplugs+eye mask ($n = 25$)1 night (9 PM-6 AM)	clinical trialC: ATU ($n = 30$)interventionCCU/Crossover designE: eye masks ($n = 30$) C: ATU ($n = 30$)1 nightNot describedICU/Crossover design Clinical trial, (post-test)Earplugs + eye masks E1: 1st ($n = 25$), E2: 2nd ($n = 25$) C: ATU1 night (10 PM-morning)The day after intervention (9 AM)CCU/RCT (non-blind)E: eye masks ($n = 30$) C: ATU ($n = 30$)3 nights (10 PM-6AM)The morning after intervention ($7 = 7 = 7 = 7 = 7 = 7 = 7 = 7 = 7 = 7 =$	CCU/Crossover design E: eye masks (n = 30) 1 night Not described Verran and Snyder-Halpern sleep scale

提出問題 (Ask)

搜尋證據 (Acquire) 嚴格評讀 (Appraisal) 恰當運用 (Apply) 衡量結果 (Audit)

FANG ET AL.



評讀結果

● 是 ○ 否 ○ 不清楚

嚴格評讀(Appraisal)

▶I - 是否只納入(Included)具良好效度的文章?

Hu, Jiang, Chen, et al., (2015); Hu, Jiang, Hegadoren, et al. (2015), China	Cardiac Surgical ICU (CSICU)/RCT (post-test)	E: earplugs+eye masks with 30-minute relaxing music (n = 20) C: ATU (n = 25)	2 nights (9 PM-morning)	Not described	Richard Campbell Sleep Questionnaire	Significant intervention effect was found for sleep quality
in et al. (2016), China	Cardiac surgery ICU/RCT	E:earplugs+eye masks (n = 32) C: ATU (n = 32)	1 night (9 PM-morning)	The day after intervention	Verran and Snyder- Halpern sleep scale	Significant intervention effect was found for sleep quality
Demoule et al. (2017), France	ICU/RCT	E1: earplugs (n=21), E2: eye masks C: ATU (n = 28)	Every night until ICU discharge (10 PM-8 AM)	ICU discharge	VAS for sleep	No significant intervention effect was found for subjective sleep quality
Litton et al. (2017), Australia	ICU/RCT	E: earplugs (n = 20) C: ATU (n = 20)	1 night (10 PM-6 AM).	Not described	Richard Campbell Sleep Questionnaire	The control group was better than the experimental group in the sleep quality The mean maximum sound level was 69 ±7 dB
Baghaie Lakeh (2018), Iran	CCU/RCT Crossover design	E: earplugs (n = 46) C: ATU (n = 46)	1 night (at least 6 hours)	6 AM to 8 AM	Verran and Snyder- Halpern sleep scale	No significant intervention effect was found for sleep quality
Menger et al. (2018), Austria	Cardiothoracic post anaesthesia care unit/ Randomized study	E: earplugs (n = 27) C: ATU (n = 36)	1 night (10 PM-6 AM)	The morning after intervention	Self-reported quality of sleep (range 1–5)	Significant intervention effect was found for sleep quality
Mahran et al. (2020), Egypt	Cardiac surgery ICU/RCT	E: eye masks (n = 31) C: ATU (n = 35)	3 nights (9 PM-7 AM)	Daily 7 AM	Richard Campbell Sleep Questionnaire	Significant intervention effect was found for sleep quality

提出問題 (Ask)

授等證據 (Acquire) 嚴格評讀 (Appraisal)

恰富連用 (Apply)



是 〇 否 〇 不清楚

嚴格評讀(Appraisal)

- ➤ 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 (Heterogeneity)?
- ◆ 針對結果進行統合分析使用森林圖呈現結果,並加上異質性分析。

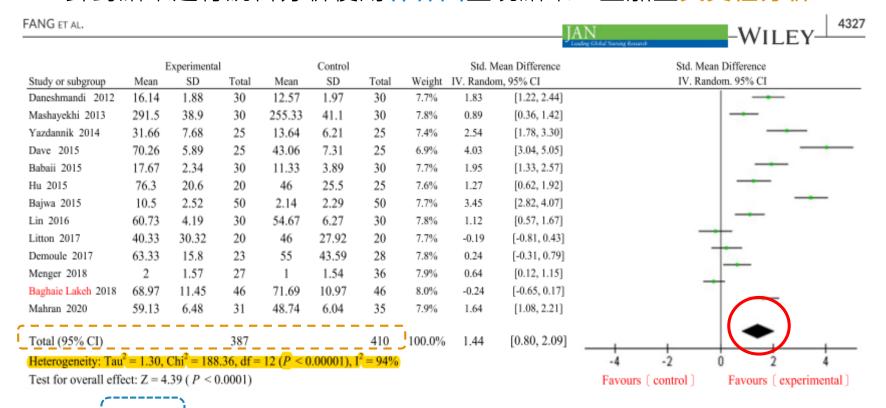
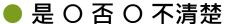


FIGURE 3 Forrest plot standardized mean difference (SMD) of overall sleep quality with earplugs and/or eye masks

- ➤ 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 (Heterogeneity)?

		Experimenta			Control				Mean Difference	Std. Mean Difference
Study or subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV. Randon	n, 95% CI	IV. Random. 95% CI
Earplugs										
Litton 2017	40.33	30.32	20	46	27.92	20	7.7%	-0.19	[-0.81, 0.43]	
Menger 2018	2	1.57	27	1	1.54	36	7.9%	0.64	[0.12, 1.15]	
Baghaie Lakeh 2018	68.97	11.45	46	71.69	10.97	46	8.0%	-0.24	[-0.65, 0.17]	
Subtotal (95% CI)			93	_		102	23.6%	0.07	[-0.50, 0.64]	•
Heterogeneity: Tau ² = 0			(P = 0.02)	$1^2 - 73\%$						
Test for overall effect: 2	Z = 0.23 (P	- 0.82)								
Daneshmandi 2012	16.14	1.88	30	12.57	1.97	30	7.7%	1.83	[1.22, 2.44]	
Mashayekhi 2013	291.5	38.9	30	255.33	41.1	30	7.8%	0.89	[0.36, 1.42]	
Babaii 2015	17.67	2.34	30	11.33	3.89	30	7.7%	1.95	[1.33, 2.57]	
Mahran 2020	59.13	6.48	31	48.74	6.04	35	7.9%	1.64	[1.08, 2.21]	
Subtotal (95% CI)			121			125	31.1%	1.56	[1.08, 2.05]	•
Heterogeneity: Tau ² = 0	.16. Chi ² = 3	8.35. df = 3	(P = 0.04)	$1^2 = 64\%$						
Test for overall effect: 2	Z = 6.32 (P)	< 0.00001)								
Earplugs and eye	masks									
Yazdannik 2014	31.66	7.68	25	13.64	6.21	25	7.4%	2.54	[1.78, 3.30]	
Bajwa 2015	10.5	2.52	50	2.14	2.29	50	7.7%	3.45	[2.82, 4.07]	
Hu 2015	76.3	20.6	20	46	25.5	25	7.6%	1.27	[0.62, 1.92]	
Dave 2015	70.26	5.89	25	43.06	7.31	25	6.9%	4.03	[3.04, 5.05]	
Lin 2016	60.73	4.19	30	54.67	6.27	30	7.8%	1.12	[0.57, 1.67]	
Demoule 2017	63.33	15.8	23	55	43.59	28	7.8%	0.24	[-0.31, 0.79]	
Subtotal (95% CI)			173			183	45.3%	2.08	[0.95, 3.21]	
Heterogeneity: Tau ² = 1	.87. Chi ² = 3	88.43. df = 5	$5(P \le 0.00)$	0001), $I^2 = 9$	4%					
Test for overall effect: 2			(,,						
Ttotal (95% CI)			387			410	100.0%	1.44	[0.80, 2.09]	
Heterogeneity: Tau ² = 1	30. Chi ² =	188 36. df=	12 (P < 0)	00001). 12 =	94%					
Test for overall effect: 2			-2 (4 . 0.		2.70					-4 -2 0 2 4
	-		-20-0	00013 72	90.49/					Favours (control) Favours (
l'est for subgroup differ	ewnces Chi	- 18.97, df	-2(P<0)	.0001), 1" =	89.4%					Favours [control] Favours [experimental





- ➤ 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 ? (Heterogeneity)?
 - 出現異質性時,可依據受試者的年齡、性別等**造成異質性的因素**,進行**『次群組分析』**或『統合性迴歸分析』來解決。

\perp_{WILE}	Y-JA	N Ang Global Navaky	g Remarch							F/	ANC
	F	Experimenta	al		Control			Std. N	dean Difference	Std. Mean Difference	
Study or subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV. Randon	, 95% CI	IV. Random. 95% CI	
1 night											
Daneshmandi 2012	16.14	1.88	30	12.57	1.97	30	6.7%	1.83	[1.22, 2.44]		
tushayeldi 2013	291.5	38.9	30	255.33	41.1	30	6.8%	0.89	[0.36, 1.42]		
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Dave 2015	70.26	5.89	25	43.06	7.31	25	5.9%	4.03	[3.04, 5.03]		_
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Baghaie Lakeh 2018	68.97	11.45	46	71.69	10.97	46	7.0%	-0.24	[-0.65, 0.17]		
Menger 2018	2	1.57	27	1	1.54	36	6.8%	0.64	[0.12, 1.15]		
Mahran 2020	46.82	8.49	31	36.79	7.31	35	6.8%	1.26	[0.73, 1.79]		
Subtotal (95% CI)			264			277	59.8%	1.27	[0.56, 1.98]		
2 nights la 2015 3ajwa 2015	76.3 10.5	20.6 2.52	20 50	46 2.14	25.5 2.29	25 50	6.6% 6.6%	1.27 3.45	[0.62, 1.92] [2.82, 4.07]		
Mahran 2020	60.44	6.87	31	50.23	6.04	35	6.6%	1.57	[1.01, 2.12]		
Subtotal (95% CI)			101	-		110	20.2%	2.09	[0.79, 3.40]		
leterogeneity: Tau ² = est for overall effect:			= 2 (P < 0)	00001), I* =	93%						
3 nights	17.67	2.24	20	11.22	2.00	20	6.607	1.05	[1 22 2 57]		
Demoule 2017	17.67 63.33	2.34 15.8	30 23	11.33 55	3.89 43.59	30 28	6.6%	1.95 0.24	[1.33, 2.57] [-0.31, 0.79]		
dahran 2020 Subtotal (95% CI)	70.12	10.08	31 84	59.19	7.62	35 93	6.8% 20.2%	1.22	[0.69, 1.75] [0.19, 2.07]		
						9.3	20.2%	1.13	[0.19, 2.07]		
leterogeneity: Tau ² = 0 est for overall effect:			- 2 (P - 0)	0002), 1° – 8	88%						
Ttotal (95% CI) Heterogeneity: Tau ² = Test for overall effect:				0.00001).1	2 - 93%	480	100.0%	1.4	[0.86, 1.95]	-4 -2 0 2 4	
est for subgroup diffe	-			1.470 I ² - 0	0.0					Favours [control] Favours [experiment	a1.3
est for subgroup diffe	rewnces	m = 4.50. a	2 (P = 0	0.47 , $\Gamma = 0$	76					ravours (control) ravours (experiment	زعم

FAITH評估總結

	評估結果								
	是	否	不確定						
Find	✓								
Appraisal	✓								
Included	✓								
Total up	✓								
Heterogeneity	✓								

提出問題 接尋證據 **嚴格評讀** 恰當運用 衡量結果 (Ask) (Acquire) (Appraisal) (Apply) (Audit)



統整結論

- ▶ 單獨使用眼罩或者是<u>眼罩、耳塞合併使用</u> 可增加睡眠品質
- ▶單獨使用耳塞無法增加睡眠品質
- <u>▶使用眼罩可增加退黑激素的分泌</u>

提出問題

(Ask)

▶連續兩晚合併使用眼罩、耳塞可達到最佳的睡眠品質_____

搜尋證據

(Acquire)

臺北市立萬芳醫院 - 委託財團法人臺北醫學大學辦理· 嚴格評讀 (Appraisal) 恰當運用 (Apply)



學牌時間

是否同意重症病人眼罩及耳塞合併使用呢?

同意

20票

不確定

2票

不同意

0票





(Ask)

(Acquire)

(Apply)

