

The Effectiveness of Preoperative Cognitive Training Reduces Postoperative Delirium in Elderly Patients: A Systematic Review

P129

Ching-Ching Cheng ^{1, 2} and Li-Chueh Weng ¹

¹ School of Nursing, College of Medicine, Chang Gung University

² Department of Nursing Management, Chang Gung Medical Foundation Administration, Taoyuan City, Taiwan

INTRODUCTION

The elderly are under noxious stimuli such as surgery, chronic stress, or exposure to toxic environmental substances. If the cognitive reserve of the elderly is insufficient, there will be a risk of postoperative delirium. A substantial cognitive reserve can help maintain the brain's normal functioning in the elderly. The effectiveness of stimulating cognitive reserve through cognitive training in reducing the incidence of postoperative delirium is unclear.

AIM

The aim of this systemic review was to investigate the effect of preoperative cognitive training on the incidence of postoperative delirium and clinical outcomes in elderly patients.

METHOD

This study was a systematic literature review. Searching Cochrane Library, PubMed, Embase, Airiti Library, Medline, NDLTD in Taiwan, Google Scholar and other clinical trial databases, as well as grey literature sources. The most recent search was completed on 1 November 2022. Four randomized clinical trials were selected that met the inclusion and exclusion criteria.

Table 1

Items	Key Word	MeSH Terms
Patient	elderly patients	elderly
Intervention	cognitive Training	cognitive training or cognitive therapy
Comparison	usually care	standard care or routine care
Outcome	delirium	acute confusion or acute confusional

RESULTS

Our study identified four studies involving a total of 484 elderly individuals, with 238 participants in the experimental groups and 246 in the control group. The results demonstrated that preoperative cognitive stimulation training can effectively enhance the cognitive reserve capacity of elderly patients. The experimental group exhibited a lower incidence rate of delirium and showed improved memory and thinking abilities compared to the control group.

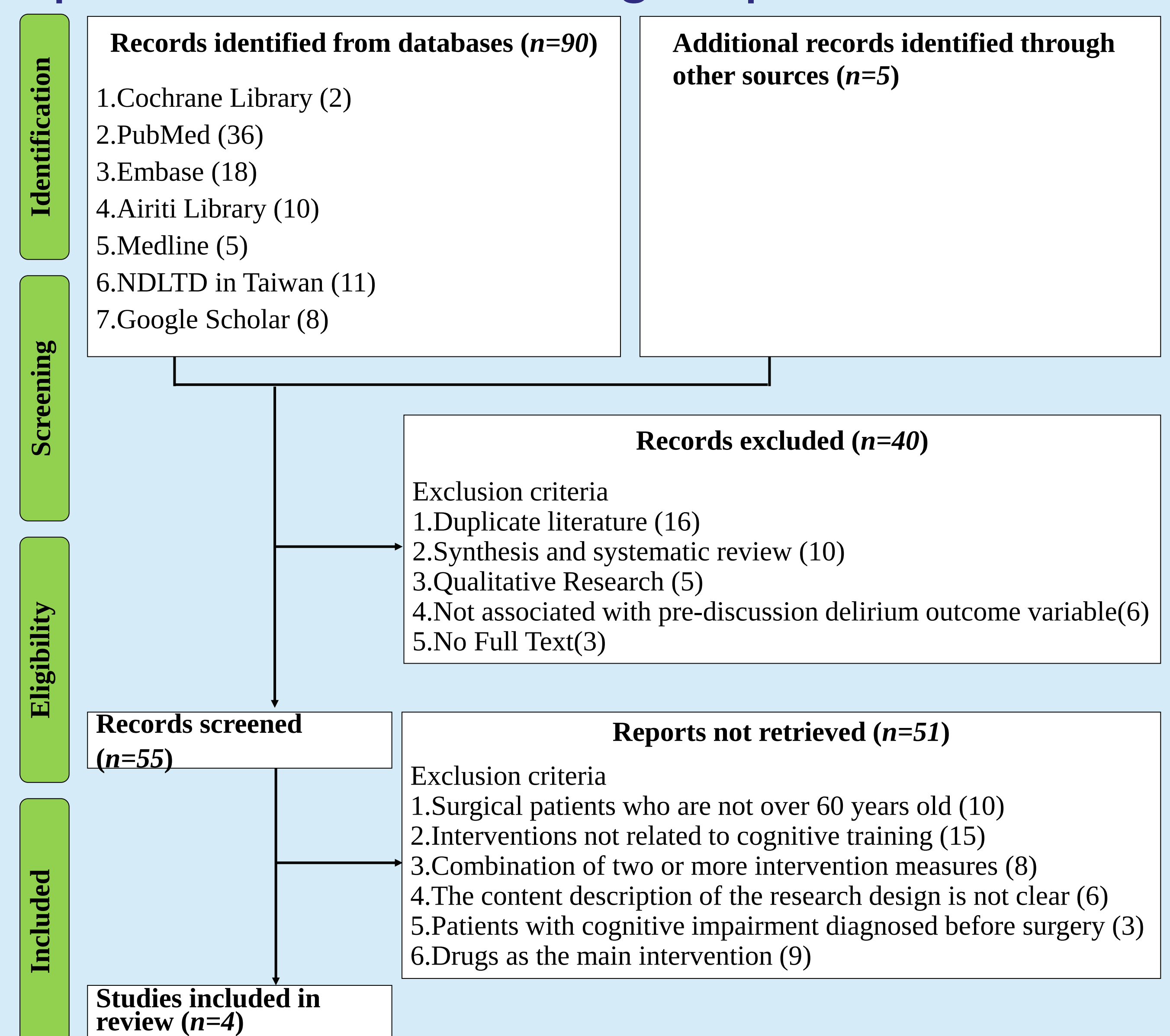


Figure1. PRISM flow chart

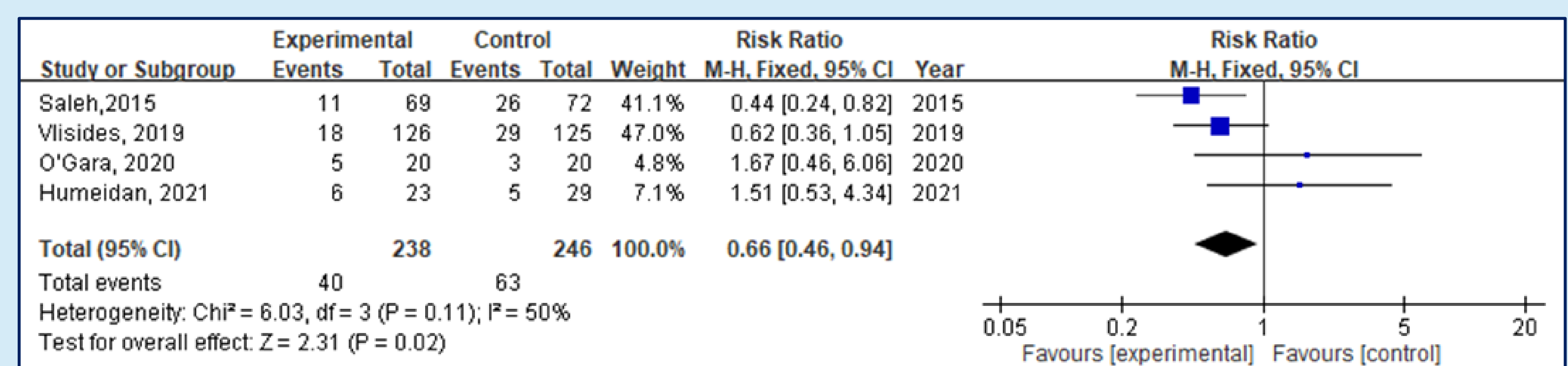


Figure2: The impact of cognitive training intervention on the incidence of postoperative delirium.

CONCLUSION

Cognitive training could be a critical strategy for preoperative standardized medical care among the elderly. Using memory-associated skills or computer puzzle games to train memory storage and thinking functions have proven to help the elderly effectively master memory-promoting skills and strengthen brain learning and problem-solving. It can also make brain networks more efficient or capable, improve cognitive reserve, and reduce postoperative delirium.

REFERENCES

- Humeidan, M. L., Reyes, J. C., Mavarez-Martinez, A., Roeth, C., Nguyen, C. M., Sheridan, E., Zuleta-Alarcon, A., Otey, A., Abdel-Rasoul, M., & Bergese, S. D. (2021). Effect of Cognitive Prehabilitation on the Incidence of Postoperative Delirium Among Older Adults Undergoing Major Noncardiac Surgery: The Neurobics Randomized Clinical Trial. *JAMA Surgery*, 156(2), 148-156. <http://doi:10.1001/jamasurg.2020.4371>.
- O'Gara, B. P., Mueller, A., Gasangwa, D. V. I., Patxot, M., Shaefi, S., Khabbaz, K., Banner-Goodspeed, V., Pascal-Leone, A., Marcantonio, E.R., & Subramaniam, B. (2020). Prevention of Early Postoperative Decline: A Randomized, Controlled Feasibility Trial of Perioperative Cognitive Training. *Anesthesia & Analgesia*, 130(3), 586-595. <http://doi:10.1213/ANE.0000000000004469>.
- Saleh, A.J., Tang, G.X., Hadi, S.M., Yan, L., Chen, M.H., Duan, K.M., Tong, J., & Ouyang, W. (2015). Preoperative cognitive intervention reduces cognitive dysfunction in elderly patients after gastrointestinal surgery: a randomized controlled trial. *Medical Science Monitor*, 21, 798-805. <http://doi:10.12659/MSM.893359>.
- Vlisides, P. E., Das, A. R., Thompson, A. M., Kunkler, B., Zierau, M., Cantley, M. J., McKinney, A. M., & Giordani, B. (2019). Home-based Cognitive Prehabilitation in Older Surgical Patients: A Feasibility Study. *Journal of Neurosurgical Anesthesiology*, 31(2), 212-217. <http://doi:10.1097/ANA.0000000000000569>.