

Research Literature Review Paper Outline

I. Introduction to the State of the Science Paper

a. Purpose of the Review

- i. To examine current research available on ginkgo biloba used in the healthcare setting
- ii. To examine the benefits and hindrances of using ginkgo biloba to treat dementia
- iii. Know and understand current treatment modalities for dementia/Alzheimer's Disease
- iv. Compare results to use of traditional pharmacological methods
- v. Understand costs of dementia to U.S.
- vi. Understand costs and availability of ginkgo biloba
- vii. Compare cost of pharmacological meds and ginkgo biloba

II. How the Search was Conducted

a. Key words used to search

- i. Ginkgo biloba
- ii. Dementia and Alzheimer's
- iii. Alternative treatments and dementia
- iv. Ginkgo biloba and dementia
- v. Cost of dementia

b. Inclusion and exclusion criteria

- i. Pertaining to nursing practice
- ii. Research articles within the last 5 years
- iii. No studies done on animals

III. Results of the Literature Review

a. Pharmacological methods

- i. Cholinesterase Inhibitors
 1. donepezil, galantamine, and rivastigmine

- a. All used for mild to moderate AD with donepezil being the most popular
- b. can cause N/V/D/A, and CNS effects such as insomnia, confusion, agitation and headache
- ii. N-methyl-D-aspartate (NMDA) receptor antagonists
 - 1. memantine
 - a. used for advanced stages of AD
 - b. can cause diarrhea, insomnia, dizziness, headache and hallucinations
- b. Benefits of using Ginkgo biloba extract
 - i. anti-apoptosis
 - ii. anti-inflammatory effects
 - iii. neuroprotection
 - iv. anxiolytic
 - v. MAO-inhibitory effects
 - vi. ROS scavenging
 - vii. antioxidant effects
 - viii. protective effects on mitochondria
 - ix. increase microcirculatory blood flow
- c. Dosages for Ginkgo biloba
 - i. 120 mg/day – this reflects the OTC availability
 - ii. 160 mg/day
 - iii. 240 mg/day
 - 1. this showed the most improvement which may indicate that even higher doses should be studied to accurately assess dose-effectiveness
- d. Ginkgo side effects – moderate concentrations seem to be well tolerated
 - i. increase risk of bleeding if used with antiplatelet or anticoagulants
 - ii. apathy/indifference

- iii. anxiety – should be studied more, because Ginkgo b. has anxiolytic effects
- iv. irritability; depression
- v. sleep disturbances
- vi. seizures – contains a seizure inducing chemical and should be avoided in susceptible patients
- vii. dizziness, headache
- viii. dry mouth
- ix. transient cyanosis of nails and lips and allergic skin reactions in rare cases

e. Cost of Dementia

- i. The incidence of dementia is steadily rising in developed countries
- ii. Alzheimer's dementia, alone, costs over \$100 billion annually
 - 1. Third most expensive pathology
- iii. With aging population, costs may more than double by 2040 if prevalences and per-person costs remain the same.

IV. Conclusion

- a. Recommendations for further research
- b. What was done well
 - i. Methods for studies are well documented
 - ii. Thorough documentation of all the information that the studies yielded
 - iii. Unwanted effects are listed for not only Ginkgo b. but the “conventional” treatments, too
- c. What needs to be improved
 - i. Need to be observed longer – longest observation was for 2 years with 6 month check-ins
 - ii. Need to try different/higher doses to identify the benefits and risks
 - iii. Need larger sample sizes
 - iv. Inclusion and exclusion criteria allowed for not needed participants, such as the ones without a diagnosis of dementia
 - v. There are possibilities that there was underreporting during the studies

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12/7/15

1. hospitalizations or participants not sticking to dose regimen
 2. Side effects associated with co-morbidity or another pharmacological medicine
- vi. Need further study on drug interactions that occur with Ginkgo b. besides antiplatelets and anticoagulants
- vii. Need further research on the cost and availability of Ginkgo biloba