



AOTA Critically Appraised Topics and Papers Series
**Driving and Community Mobility
for Older Adults**

**A product of the American Occupational Therapy Association's
Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER (CAP)

Focused Question

What is the evidence for the effect of interventions to address cognitive and visual function, motor function, driving skills intervention, self-regulation/self-awareness, and the role of passengers and family involvement in the driving ability, performance, and safety of the older adult? Intervention approaches include adaptation, remediation, prevention, and maintenance.

Stalvey, B. T., & Owsley, C. (2003). The development and efficacy of a theory-based educational curriculum to promote self-regulation among high-risk older drivers. *Health Promotion Practice, 4*(2), 109–119. [also reported in Owsley, C., Stalvey, B. T., & Phillips, J. M. (2003). The efficacy of an educational intervention in promoting self-regulation among high-risk older drivers. *Accident Analysis and Prevention, 35*, 393–400.]

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

State the problem the authors are investigating in this study.

Many older drivers meet the legal requirements for licensing despite having visual deficits that elevate crash risk. However, with driver behavior as the predominant factor in 90% of crashes, drivers who do experience impaired visual capabilities may compromise their driver safety. These findings serve as the rationale for the development of an educational intervention for older drivers who are visually impaired yet legally licensed to drive—a priority for a driving population at high risk for crash involvement.

RESEARCH OBJECTIVE(S)

List study objectives.

To evaluate the efficacy of Knowledge Enhances Your Safety (KEYS), a curriculum developed for older drivers who maintain driving privileges while coping with visual limitations that increase crash risk.

DESIGN TYPE:

Randomized Controlled Trial

Level of Evidence:

I

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *If no, explain.*

Yes

No

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

Controlled/Purposive—Deliberate selection of individuals

Inclusion Criteria

All crash-involved drivers living in the Birmingham, AL, metropolitan area were contacted by letter and then by telephone. Participants were screened to meet the following criteria:

- Over 60 years of age
- Legally licensed to drive in Alabama
- Visual acuity and/or processing deficits (visual acuity between 20/30 and 20/60)
- High level of driving exposure—5 to 7 days or 100 miles or more each week.
- A history of crash involvement—at least 1 crash reported to the state in the prior year as identified through the Alabama Department of Public Safety

Exclusion Criteria

- Mini Mental Status Examination (MMSE) of less than 23
- Those whose vision impairment could be reversed through treatment

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes

No

Attention

Yes

No

Others (list and explain):

SAMPLE CHARACTERISTICS

N = 365 (194 in intervention, 171 in control)

% Dropouts

20

#/(%) Male

69%

#/(%) Female

31%

Ethnicity

23% African American, 77% white

Disease/disability diagnosis

N/A

Check appropriate group:

<20/study group	20–50/study group	51–100/study group	101–149/study group	150–200/study group ✓
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Sample Characteristics Bias: If no, explain.

If there is more than one study group, was there a similarity between the groups?

Yes

No

Were the reasons for the dropouts reported?

Yes

✓ Twenty participants who were assigned to the intervention group and did not elect to participate in the educational program were excluded from the analysis.

No

INTERVENTION(S)—Included are only those interventions relevant to answering the evidence-based question.

Add groups if necessary

Group 1

Brief Description	Usual care—comprehensive eye exam with discussion of the impact of any diagnosed visual impairment on the activities of daily living such as driving
Setting	Eye clinic
Who Delivered?	Optometrist
Frequency?	Once
Duration?	Length of visit

Group 2

Brief Description	Usual care plus educational intervention—comprehensive eye exam with discussion of the impact of any diagnosed visual impairment on the activities of daily living such as driving. After usual care, the intervention group participated in two educational sessions.
Setting	Eye clinic
Who Delivered?	Optometrist (usual care), health education specialist (educational intervention)
Frequency?	Once (usual care), 2 educational sessions, 1 month apart
Duration?	Educational sessions (first, 2 hours; second, 1 hour)

Intervention Biases: *Explain, if needed.*

Contamination

Yes

No

Co-intervention

Yes

No

Timing

Yes

No

Site

Yes

No

Use of different therapists to provide intervention

Yes

No

MEASURES AND OUTCOMES—Included are measures relevant to answering the focused question.

Name of measure:

The Driver Perceptions and Practices Questionnaire—developed for study

Outcome(s) measured (what was measured?):

Outcome(s) measured (what was measured?): Self-perception of vision impairment and its impact on driving; perceived threat of crash involvement; barriers to the performance of self-regulatory practices in terms of external sources, personal desire, and dependence on others; benefits to the performance of self-regulatory practices; level of readiness to adopt new behavior; and regulatory self-efficacy.

Is the measure reliable (as reported in article)?

Yes

No

NR

NR = Not reported.

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

At baseline and again by telephone to both groups at 6 months following randomization. Posttest interviewer was different than the educational counselor.

Measurement Biases

Were the evaluators blinded to treatment status? *If no, explain.*

Yes

No

Recall or memory bias? *If yes, explain.*

Yes

No

Others (list and explain):

Limitations (appropriateness of outcomes and measures) *If no, explain.*

Did the measures adequately measure the outcome(s)?

Yes

No

RESULTS

List results of outcomes relevant to answering the focused question.

Include statistical significance where appropriate ($p < 0.05$).

Include effect size if reported.

At posttest, those who participated in the educational sessions reported a significantly greater level of perceived vision impairment and understanding about its impact on driving when compared to controls ($p < .01$). In addition, at posttest, those who participated in the educational intervention reported a significantly higher number of perceived benefits to self-regulation ($p < .01$) when compared to the controls. With respect to level of readiness to change, those who participated in the educational intervention moved closer to the preparation stage ($p < .01$) and the action/maintenance group ($p < .01$) than those in the control group. There were no differences between intervention and control group in change scores with respect to the perceived threat of crash involvement, perceived barriers to self-regulation, perceived regulatory self-efficacy, and being in the precontemplation state of change.

Was this study adequately powered (large enough to show a difference)? *If no, explain.*

Yes

No

Were appropriate analytic methods used? *If no, explain.*

Yes Pre- and posttest measure is self-report

No

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

Healthy low-risk older drivers may enroll in educational programs to maintain their active lifestyle. The present study is important because the study population included individuals who were in a higher risk older driver group due to visual deficits. The study showed that individuals with a condition that places them in a high-risk driving cohort can respond to an educational program that promotes self-regulation due to recognizing how deficits affect driving performance.

Were the conclusions appropriate for the Study Design (Level of Evidence)? *If no, explain.*

Yes

No

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

Individuals may find it reasonable to understand the relationship between eye health, vision, and the activity of driving. With visual impairments, an individual may experience difficulty driving, which provides a “real life” feedback system that reinforces the concept that impaired vision affects driving performance. Therefore, using a population with visual impairments was an excellent choice to test this educational intervention.

The model of intervention discussed in the research, one-on-one, is a model used by occupational therapists where the intervention is customized per client. Unfortunately, the authors end the paper by stating that a computerized version of the curriculum may be a promising method of distribution. Possibly, it is the one-on-one methodology that makes the educational intervention successful because it utilizes the therapeutic-self of the healthcare provider. This aspect of the intervention may be the key to its success. Rather than eliminating this factor, further research should explore the value of this component (independent variable) to the success of the intervention, self-regulation (dependent variable) or the stage of being prepared to self-regulate.

This is an important study, as it provides ways of developing self-insight in clients who have impairments. This is critical for any client to be successful in the rehabilitation process.

Individuals were prepared to think about self-regulation rather than actively self-regulating. Since this is the first step to self-regulation, it is a valuable outcome of the intervention.

This work is based on the evidence-based literature review completed by Linda Hunt, PhD OTR.

CAP Worksheet adapted from: Critical Review Form – Quantitative Studies ©Law, M., Stewart, D., Pollack, N., Letts, L., Bosch, J., & Westmorland, M., 1998, McMaster University. Used with permission.

For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6611, x 2052.



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