



Brief Report

Referring Patients With Early Dementia Symptoms: An Evidence-Based Practical Intervention for Advanced Practice Registered Nurses

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A B S T R A C T

Keywords:

adult nurse practitioner
Alzheimer disease
dementia
evidence-based practice
family nurse practitioner
nurse practitioner education

Rising global rates of aging and dementia make NP identification of and referral for early symptoms of dementia vital. This project evaluated web-based dementia education to improve NP knowledge and confidence in recognizing and referring for early symptoms of dementia. Thirty-one NPs completed online training. Assessments included basic dementia knowledge questions provided by the US Health Resources and Services Administration, and the New General Self-Efficacy Scale. Improvements were significant in dementia knowledge ($P = .025$) and self-efficacy for referral ($P = .029$). The web-based education project enhanced NP knowledge and self-efficacy regarding referrals for early symptoms of dementia, potentially improving patient outcomes.

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Background

The global population is experiencing an increase in longevity. As demographic shifts favor an older age group, there is a concomitant rise in the prevalence of dementia. The World Health Organization defines dementia as several conditions that negatively affect memory, cognitive functioning, and behaviors.¹ Currently, dementia affects more than 55 million individuals globally, with approximately 10 million new cases identified annually.² Annual expenditures for the care of persons living with dementia are approximately US \$1.3 trillion.¹ From 2030 to 2050, the number of people aged 60 and older worldwide is expected to increase from 1.4 to 2.4 billion.² Given the increase in the aging population, the costs of dementia care will likely continue to rise.

It is estimated that 5% to 6% of patients show symptoms of dementia before reaching the age of 65, compared with approximately 33% of individuals over the age of 90.^{3,4} Early-stage dementia typically presents with symptoms such as memory impairment, difficulties in concentration, and inability to perform daily activities. Difficulties with daily tasks may begin more subtly, with sustained inability to find objects, difficulties with managing finances, or missing scheduled appointments. Personality changes may also appear. As dementia progresses, more significant difficulties with activities of daily living may emerge, and patients may no longer be able to feed, bathe, or clothe themselves.^{5,6} At later stages, visual disturbances or language impairments may also be seen.⁵

Early symptoms of dementia are sometimes attributed to multiple issues, including stress, age-related physiologic changes, metabolic disease or infection.⁷ Early recognition, referral, and treatment by health care providers, including NPs, can lead to

improved patient outcomes and an enhanced quality of life.⁸ One effective strategy to ensure better outcomes is through the education of NPs regarding the appropriate identification and timely referral of patients for suitable medical management. Early referrals to qualified specialists will facilitate accurate, specific, and prompt diagnosis through comprehensive dementia evaluation protocols. The existing literature highlights a need for evidence-based modifications in clinical practice to enhance early diagnosis and treatment of dementia.⁷

Current research underscores the importance of educating health professionals about the early symptoms of dementia, especially in younger populations; however, there remains a paucity of information regarding interventions specifically designed for NPs.⁸ This gap is particularly significant because NPs are increasingly prevalent in primary care and exert considerable influence on patient outcomes.⁹

Much available research on early dementia symptoms is in the form of published journal articles or in educational textbooks, neither of which may be easily accessible to the NP without a paid or educational account. Access to free, simple, web-based education can ensure earlier identification of symptoms and appropriate referral to optimize patient outcomes. To help address the gap between availability and accessibility, an evidence-based educational training module developed by the US Department of Health and Human Services Health Resources and Services Administration (HRSA), that is freely available on the internet, was provided to NPs to better inform and educate on early dementia symptoms and management.¹⁰ The training presents specific evidence-based recommendations for identifying and promptly referring individuals with early dementia symptoms.

Dementia Knowledge Score (DKS)

1. Which of the following is a hallmark sign of early-stage Alzheimer's disease?
 - a. Inability to live independently any longer
 - b. Visual hallucinations
 - c. Impairments in short-term memory**
 - d. Substantial personality changes

2. Persons living with early-stage dementia are likely to have difficulties with:
 - a. Their ability to focus and pay attention**
 - b. Toileting
 - c. Remembering the name of their spouse or children
 - d. Their balance

3. Behavioral and psychological symptoms of early-stage Alzheimer's disease include:
 - a. Auditory hallucinations
 - b. Mood disorders**
 - c. Psychosis
 - d. Delusions

4. What are the recommended first-line strategies for managing behavioral and psychological symptoms of early-stage dementia?
 - a. Pharmacologic interventions
 - b. Nonpharmacologic interventions**
 - c. Ignoring the symptoms
 - d. Rationalizing with the person living with dementia

Figure 1. Dementia Knowledge Score

Goals and Purpose

The aim of this web-based educational training was to enhance provider knowledge and self-efficacy surrounding early dementia symptoms and their management. The purpose was twofold: first, to educate NPs about early symptoms of dementia, its clinical importance, and management strategies; and second, to augment provider self-efficacy in facilitating prompt patient referrals for exact diagnosis and treatment of early-onset dementia.

Self-efficacy is an individual's belief in their capacity to complete behaviors necessary to achieve specific behaviors and influences how individuals motivate themselves to behave a certain way.¹¹ Self-efficacy is an essential concept within health care and has been used as an effective strategy to improve outcomes for both patients and providers. Self-efficacy promotes initiating, adopting, and maintaining behaviors that yield positive outcomes in people's lives.¹² Adequate knowledge and skills also influence behavioral patterns.¹³

For this web-based educational training, participants were persuaded to take the initiative to refer patients with early dementia symptoms through an enhanced learning opportunity that benefited their practice. The project participants completed a pre-test, a web-based learning module, and a follow-up test. The proposed format allowed the NPs to advocate for their learning and allowed them to complete the task successfully owing to its familiar format.

Methods

A convenience sample of NPs participated in the web-based educational training. Following approval from the Institutional

Review Board at the authors' university, recruitment was initiated by disseminating a link to the web-based dementia education along with pre- and post-test surveys. The link was distributed via the Ohio Nurse Practitioner Facebook Group and the Ohio Association of Advanced Practice Nurses (OAAPN), as well as among the authors' NP colleagues. Furthermore, business cards featuring a QR code were distributed to attendees at the American Medical Directors Association and The Society for Post-Acute and Long-Term Care Medicine conference in March 2024. Multiple access points for the survey were provided, including social media and OAAPN website posts, which contained a Qualtrics link directing participants to the web-based dementia education project. The QR code enabled access through mobile devices.

Eligibility required participants to 1) be at least 18 years old, 2) possess a current APRN license, and 3) be able to provide voluntary implied consent. The education project involved a presentation designed to inform and educate NPs about the symptoms of early dementia. The primary author narrated an online education session developed by the United States Department of Health and Human Services on the symptoms of early-onset dementia.¹⁴ NPs completed a demographic questionnaire before the training session.

Two assessment instruments were administered both before and after the education session to evaluate the effectiveness of the web-based education project: a Dementia Knowledge Score (DKS) and the New General Self-Efficacy Scale (NGSES). The DKS items were the evaluation questions provided in the HRSA training module. Each of the 4 items was scored as correct or incorrect, for a total score of 0 to 4, with higher scores indicating higher knowledge (Figure 1).¹⁰ Self-efficacy in managing patients exhibiting early dementia symptoms was evaluated using the 8-item NGSES,

New General Self Efficacy Scale (NGSES)

The following statements are related to self-efficacy, or your belief in your motivation and ability to complete certain tasks and behaviors

Please respond to each of the following statements to the best of your ability as it relates to **your ability and motivation to identify and manage care of patients experiencing symptoms of early dementia.**

There are no right or wrong answers.

- 1 = strongly disagree
- 2 = disagree
- 3 = neither agree nor disagree
- 4 = agree
- 5 = strongly agree

1. I will be able to achieve most of the goals that I set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Figure 2. New General Self-Efficacy Scale

a validated measure in which responses are scored on a Likert-type scale where 1 = strongly disagree and 5 = strongly agree. When summed, scale scores range from 8 to 40, with higher scores indicating greater levels of self-efficacy (Figure 2).¹⁵ Although self-efficacy deficits were not explicitly identified before the web-based education project, the instructions for the NGSES were adapted to assess domain-specific self-efficacy by prompting participants to reflect on their “ability and motivation to identify and manage the care of patients experiencing symptoms of early dementia.”¹⁵ Internal consistency reliability for the NGSES in the current sample was 0.901 and 0.937 for the pre-test and the post-test, respectively.

Data analysis was conducted using version 29 of IBM SPSS Statistics. The data were cleaned and prepared for analysis. There were no missing data at the item level. At the participant level, missing data were handled through pairwise deletion by analysis. Total scores were calculated for dementia knowledge and self-efficacy. Scores on the dementia questions for individual participants were obtained by summing correct responses at both pre-test and post-test stages. The Wilcoxon signed rank test, a nonparametric test that is robust to violations of normality assumptions, was used to assess each targeted outcome. This test was used because it compares and analyzes paired samples, including before-and-after measurements on the same subjects.

Effect sizes were calculated for each outcome. To determine significance, the alpha level was set at .05.

Results

Although all APRNs were eligible to participate, only family NPs, adult-gerontology primary-care NPs, and adult-gerontology acute-care NPs participated. A total of 32 NPs initiated the demographic questionnaire, with 31 completing it in its entirety. Approximately one-third of the participants possessed adult-gerontology certification, and nearly two-thirds were certified as family NPs. About 44% of the participants had 0–4 years of experience as an NP, and the second-largest group (~ 34%) had 5–10 years of experience (Table 1).

Thirty participants completed both the dementia knowledge questionnaire and the self-efficacy assessments in their entirety, with 1 additional individual completing only the DKS of the pre- and post-tests. The results of nonparametric statistical analysis demonstrated a significant enhancement in dementia knowledge ($Z = 2.236$; $P = .025$) and in self-efficacy regarding referral of patients exhibiting early dementia symptoms ($Z = 2.180$; $P = .029$). Effect sizes for each outcome were small (Table 2).

To further examine the effect of the web-based education program on provider self-efficacy for referral, a subgroup analysis

Table 1
Participant Characteristics (n = 31)

Characteristic	Category	n	%
Age, y	20-29	5	16.1
	30-39	12	38.7
	40-49	6	19.4
	50-59	5	16.1
	60-69	2	6.5
	≥70	1	3.2
Sex	Female	22	71.0
	Male	4	12.9
Race	Black or African American	1	3.2
	White or Caucasian	25	80.6
Ethnicity	Non-Hispanic	26	83.9
	Hispanic	5	16.1
Years of NP experience	0-4	13	41.9
	5-10	11	35.5
	11-15	3	9.7
	16-20	2	6.5
	>20	2	6.5
Currently practicing as NP	Yes	26	83.9
	No	5	16.1
NP certifications	Adult-Gerontology Acute Care NP	3	9.7
	Adult-Gerontology Primary Care NP	7	22.6
	Family NP	21	67.7
Referred patients for early dementia symptoms	Yes	14	45.2
	No	17	54.8

was performed for the 17 participants who had not previously referred patients for early symptoms of dementia. The results of that analysis indicated significant enhancement in self-efficacy ($Z = 2.774$; $P = .006$). The effect size of 0.48 indicates a moderate, approaching large, effect (Table 3).

Discussion

The World Health Organization has recognized dementia as a priority in public health and calls for expedited efforts to manage and enhance the lives of individuals who have dementia and their caregivers.² In 2017, the Seventieth World Health Assembly adopted a global action plan to address the dementia crisis. A key focus of that plan is on early detection, treatment, and support for individuals with dementia. Delayed diagnosis can lead to poorer outcomes and decreases in quality of life for persons with dementia.⁷ The early clinical manifestations of dementia and its effect on quality of life are extensively documented in existing literature.¹⁶ Health care providers must be able to identify modifiable risk factors, as well as cognitive, behavioral, mood, psychologic, and functional indicators, that facilitate early diagnosis, web-based education, and optimal outcomes for individuals affected by this widespread disease.⁷

The present intervention aligns with World Health Organization recommendations for action in the early intervention and

Table 2
Wilcoxon Signed Rank Test Results for Outcome Variables

Outcome	n	Pre-Test	Post-Test	Z	P	Effect Size ^a
Dementia Knowledge	31	4.0 (3.0-4.0)	4.0 (3.0-4.0)	2.236	.025	0.28
Self-Efficacy	30	32.0 (31.0-35.0)	34.0 (32.0-38.0)	2.180	.029	0.28

Test results are presented as median (interquartile range).

^a Effect size = $Z/\sqrt{n}$.

Table 3
Wilcoxon Signed Rank Test Results of Subgroup Analysis

Outcome	n	Pre-Test	Post-Test	Z	P	Effect Size ^a
Self-Efficacy	17 ^b	32.0 (31.0-39.0)	35.0 (32.0-39.0)	2.774	.006	0.48

Test results are presented as median (interquartile range).

^a Effect size = $Z/\sqrt{n}$.

^b Participants who had not previously referred patients for early dementia symptoms.

treatment of dementia. The results of this web-based education project suggest that educating NPs about the symptoms of early dementia enhances their self-efficacy in effectively managing care for patients exhibiting early-onset dementia symptoms. This is particularly important as the condition of these patients can rapidly decline without proper and early intervention.⁸ The early symptoms are vague and can be attributed to metabolic or infectious origins, or as normal changes with ageing. Ensuring that the NP or primary care provider knows the best next steps to take once symptoms are identified can strengthen their patient's overall outcome. Providing prompt referrals allows for specific testing to be ordered to ensure that all other causes are eliminated, as well as allows the patient to have optimal health outcomes through specialty care.^{5,7} Caring for these patients is multifaceted and requires participation from all involved in managing the patient. They will continue to see primary care, but facilitating care and collaborating with specialists (neurologists, social workers, speech and occupational therapists) can help to maintain cognitive reserve and functioning for as long as possible.⁶

The user-friendly nature, accessibility, online format, and conciseness of the educational module are regarded as positive factors influencing the adoption and long-term sustainability of the web-based education project.¹⁷ The module could be translated into other languages to further support the sustainability of the web-based education project and support the World Health Organization efforts to detect and manage early dementia symptoms globally. The information provided is evidence-based, easy to understand, and freely accessible to health care providers in all roles (RNs, APRNs, PAs, and physicians).^{10,14} Economic advantages include affordability and the potential for efficient and cost-effective utilization of health care resources.

There were limitations that may affect the adoption and sustainability of this web-based education project. There was a lack of awareness about the resource among the NP and health care communities. Furthermore, there were limitations within the web-based education project design. There was no control group, and the sample size was small. There is a risk for bias given the occupations of the participants. There was also no long-term follow-up to determine if knowledge and self-efficacy were retained, and no feedback from participants was provided. Additional factors affecting adoption and sustainability include a lack of awareness about the tool among the NP community, physicians, and PAs, interconnectivity challenges, and a noninteractive web-based education project design.

Despite these limitations, the project does demonstrate the effectiveness of this web-based education project in increasing dementia knowledge and self-efficacy for referral of patients with early symptoms of dementia. Recognizing such symptoms can contribute to minimizing delays in diagnosis or misdiagnosis. Differential diagnoses are extensive, with symptoms that may resemble those of other conditions.^{8,18} Accurate and appropriate referral for testing facilitates the development of an optimal treatment plan and enhances health outcomes, thereby promoting the efficient allocation of health care resources.

CRediT authorship contribution statement

Ilana San Souci: Writing – review & editing, Writing – original draft, Methodology, Data curation, Conceptualization. **Kathleen Mitchell:** Writing – review & editing, Writing – original draft, Supervision. **Angela Scardina:** Writing – review & editing, Writing – original draft, Supervision. **Kristina Reuille:** Writing – review & editing, Supervision, Methodology, Formal analysis. **Sara Hunter:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization.

Declaration of competing interest

In compliance with standard ethical guidelines, the authors report no relationships with business or industry that may pose a conflict of interest.

Funding

None.

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