Archives of Psychiatric Nursing 33 (2019) 123–128

Contents lists available at ScienceDirect

Archives of Psychiatric Nursing

journal homepage: www.elsevier.com/locate/apnu

Implementing a depression screening algorithm in a memory clinic

Michelle Gillitzer (DNP)

University of Iowa, College of Nursing, 101 College of Nursing Building, 50 Newton Road, Iowa City, IA 52242, United States of America

ARTICLE INFO

Keywords:
Depression
Cognitive impairment
Dementia
Screening
Follow-up

ABSTRACT

Purpose and rationale: Improved and appropriate utilization of depression screening will increase the quality of life for those individuals with dementia who may have undetected or untreated depression.
Synthesis of evidence: Depressive symptoms may be an early sign of dementia or occur at any stage.
Proposed change and implementation strategies: An algorithm was piloted in which initial cognitive screenings were administered prior to using either the Cornell Scale for Depression in Dementia (CSDD) screen or Geriatric Depression Scale Short Form (GDS-SF) screen.
Evaluation: Findings included an increase in depression screening and an improvement of clinician knowledge of screening tools.
Conclusions and implications for practice: This project enhanced knowledge among the clinicians, however, only one provider improved practices.

Introduction

According to the Alzheimer's Association (2018), dementia is defined as a decline in cognitive function interfering with activities of daily living. Symptoms of dementia can vary, but at least two of the following core mental functions must be impaired for diagnosis: memory, communication, language, reasoning and judgment, visual perception, or ability to focus (Alzheimer's Association, 2018). Dementia has been recognized as a major cause of disability and dependency due to the negative impact on physical and psychological health (World Health Organization [WHO], 2017). Those with moderate or advanced stages of dementia display behavioral or psychological symptoms, which are estimated to occur in 80% of people with dementia (Development Group of the Clinical Practice Guideline on the Comprehensive Care of People with Alzheimer's Disease and Other Dementias, 2010; Spector, Orrell, & Goyder, 2013).

The relationship of dementia and depression has been researched, and the presentation of symptoms can be coexisting. Depression is a common neuropsychiatric symptom of dementia, and depressive symptoms may be an early sign of dementia or occur at any stage of dementia (Brodaty & Arasaratnam, 2012; Panza et al., 2010). Olin, Katz, Meyers, Schneider, and Lebowitz (2002) identified that 34% of patients with mild cognitive impairment (MCI) also displayed depressive symptoms. Additionally, it was expected that half of patients with dementia will experience depression or depressive symptoms during the stages of dementia. For individuals ages 60 years and older, dementia and depression are the most common mental and neurological disorders, affecting 5% and 7%, respectively (WHO, 2017). Studies have suggested that individuals with dementia and comorbid depressive symptoms may experience social isolation and decreased quality of life, in addition to a faster cognitive decline than those without depression (Rapp et al., 2011; Winter, Korchounov, Zhukova, & Bertschi, 2011). Therefore, throughout the course of cognitive changes, routine depression screening is pertinent and can provide detection of depressive symptoms.

Providers must understand depressive symptoms as features of sadness, emptiness, and irritable mood, while somatic and cognitive changes will affect an individual's functional status (American Psychiatric Association [APA], 2013). The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) (2013) provides the specific diagnostic criteria necessary and defines the depressive symptoms in disorders according to duration, timing, and etiology. Older adults often present with melancholic symptoms or psychomotor disturbances (APA, 2013). Neuropsychiatric symptoms, such as depression, has been identified as a risk factor in conversion of cognitive impairment not dementia (CIND) to dementia (Peters et al., 2013). Major depression disorder can double the risk of transition from mild cognitive impairment to dementia (Modrego & Ferrández, 2004).

Studies have demonstrated older adults, with or without dementia, will often have undetected or untreated depression (Charney et al., 2003; Jeon et al., 2013; Snowdon & Fleming, 2008). Potential gaps in clinical practice may be attributed to inadequate or inappropriate depression assessment, or the improper use of diagnostic criteria to identify depression (Alexopoulos & Abrams, 1991; McCabe et al.,

E-mail address: Michelle-dellamuth@uiowa.edu.

https://doi.org/10.1016/j.apnu.2019.10.003
Received 28 May 2019; Received in revised form 25 September 2019; Accepted 18 October 2019

2006). Identifying depression in a patient with co-existing dementia is a barrier to some providers, as individuals that are cognitively impaired are unable to adequately express their needs and symptoms (Brown, Raue, & Halpert, 2015). This challenge often presents in primary care clinics or specialty clinics. Additionally, Knapskog, Barca, and Engedal (2013) found a high prevalence of depression in patients visiting a memory clinic. Consequently, there is significant value in understanding depressive symptoms in dementia, screening for depression, and diagnostic assessment due to the psychological changes in the cognitive spectrum of dementia.

Purpose and objectives

The purpose of this project was to improve practice and appropriate utilization of depression screening tools for new patients with suspected cognitive decline. The objectives were to: 1) increase clinician knowledge of depression screening tools, 2) increase depression screening in new patients with suspected dementia, and 3) rescreen patients with positive depression screening within one month.

Synthesis of the literature

The Mini-Mental Status Examination (MMSE) is a validated and reliable screening tool to assess cognitive function. The MMSE may be utilized to measure memory, orientation, language, attention, visuospatial, and constructional skills (Folstein, Folstein, & McHugh, 1975). The MMSE is scored from 0 to 30, with scores of ≤ 23 indicating dementia with high sensitivity and specificity (Folstein et al., 1975). Literature on the sensitivity and specificity of MMSE has been variable dependent upon dementia severity. Smith, Gildeh, and Holmes (2007) found those with mild cognitive impairment (MCI) are identified with a specificity of 17% using a cut-off score of 26. However, a Cochrane Review determined that using the MMSE could correctly identify dementia in 85% of individuals screened for dementia (Creavin et al., 2016).

An alternative cognitive assessment tool is the Montreal Cognitive Assessment (MoCA), which is a 10 min, 30-point screening test to detect MCI in patients scoring between 24 and 30 points on the MMSE (Nasreddine et al., 2005). The MoCA utilizes tasks for frontal executive functioning and attention and demonstrated a sensitivity of 83% for subjects with MCI with a cut-off score of 26 (Smith et al., 2007). When detecting dementia among patients, the MMSE had a sensitivity and specificity of 25% and 100%, respectively. Comparatively, the MoCA had a 94% sensitivity and a 50% specificity (Nasreddine et al., 2005; Smith et al., 2007). Traditionally, the MoCA and MMSE were both utilized in cognitive screening; however, due to the recent changes in proprietary status of the MMSE, MoCA has become preferred by many clinicians.

The Geriatric Depression Scale Short Form (GDS-SF) and the Cornell Scale for Depression in Dementia (CSDD) provide a quantitative rating of depression (Alexopoulos, Abrams, Young, & Shamoian, 1988a; Yesavage et al., 1982). The GDS has been validated in detection of depression in older adults and is available in a short form or long form. The short form is a 15-item screening tool with yes or no answers that may be administered in 5 min (Sheikh & Yesavage, 1986). In the short form of GDS, the threshold score of 6 has demonstrated high specificity and sensitivity in those with mild and moderate cognitive impairment (McCabe et al., 2006). The United States Preventive Services Task Force (2016) statement on depression screening for adults suggests utilizing the GDS for older adults but does not recommend screening tools specific to the cognitively impaired population.

The CSDD provides a quantitative rating of depressive symptomology throughout an entire range of cognitive impairment (Alexopoulos et al., 1988a). An important consideration to the administration of the CSDD screen is the need for adequately trained staff and clinicians, as this screen combines the use of patient and informant interviews (Brown et al., 2015). In a consensus statement by the American Geriatrics Society and the American Association for Geriatric Psychiatry (2003), it was recommended to screen mild or moderate cognitively impaired nursing home residents with the GDS or Beck Depression Inventory screening instruments and use the CSDD for those with moderate to severe dementia. However, the CSDD alone showed validity for those with or without dementia (Alexopoulos, Abrams, Young, & Shamoian, 1988b). In a validity study evaluating the GDS with the CSDD for depression in dementia, the geriatric depression scale versions demonstrated sensitivities in the range from 82% to 90% and specificities from 75% to 94% (Kørner et al., 2006). Also, among both screening tools, inter-rater reliabilities were high with an almost perfect correlation. However, the CSDD demonstrated a higher sensitivity and specificity of 93% and 97%, respectively, at a threshold of ≥ 6 (Kørner et al., 2006).

The Patient Health Questionnaire-2 item interview (PHQ-2) and Patient Health Questionnaire-9 item interview (PHQ-9) are alternatives in depression screening. The PHQ-2 inquiries about the frequency of depressed mood and anhedonia over the past two weeks (Kroenke, Spitzer, & Williams, 2003). If patients screen positive in the PHQ-2, then further evaluation with the PHQ-9 is performed to determine whether they meet the criteria for depressive disorder. The PHQ-9 begins with the first two questions of the PHQ-2. The PHQ-9 demonstrates diagnostic validity for depression screening in the primary care setting (Spitzer, Kroenke, Williams, & Patient Health Questionnaire Primary Care Study Group, 1999). The PHQ-2 and PHQ-9 have been shown to be quick and easy tools for assessing depression among older adults with memory impairment, but the PHQ-9 performance is modest in the application of patients with moderate to severe dementia (Hancock & Larner, 2009).

The evidence-based practice algorithm selected for this project was featured in the *Journal of Gerontological* Nursing (2015) and is supported by The University of Iowa John A. Hartford Foundation Center for Geriatric Nursing Excellence (Brown et al., 2015). The three-step process utilizes initial cognitive screening with the Mini-Mental State Examination (MMSE). Based on MMSE scores, patients are subsequently screened for depression with either the Cornell Scale for Depression in Dementia (CSDD) screen or the Geriatric Depression Scale Short Form (GDS-SF) screen (see Fig. 1) (Brown et al., 2015). A further evaluation with the DSM-5 diagnostic criteria for depression is the final step if a patient has a positive screen, otherwise it is indicated to rescreen in six months, unless clinically indicated earlier. The algorithm was developed based upon literature supporting screening tools and an analysis of evidence of detection of depression in older adults (Brown et al., 2015). A systematic depression assessment can identify risk of depressive symptoms, demonstrate severity, and monitor for changes over time.

Materials and methods

The project was deemed not human subjects research by the University of Iowa Institutional Review Board.

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care was used for this project. The model provides an algorithm to synthesize evidence, design and implement a practice change, and to disseminate the evidence (Iowa Model Collaborative, 2017). This model provided processing components that were necessary during the redesign of this project.

The setting for this project was a specialty memory clinic in an urban community providing care for older patients experiencing age-related or complex medical conditions including: memory loss, incontinence, wandering, frequent falls, depression, or osteoporosis. The project director met with key stakeholders and reviewed current depression screening practices in the clinic. Among the key stakeholders were two physicians and one nurse practitioner, all of whom have expertise and experience in the treatment of patients with dementia.

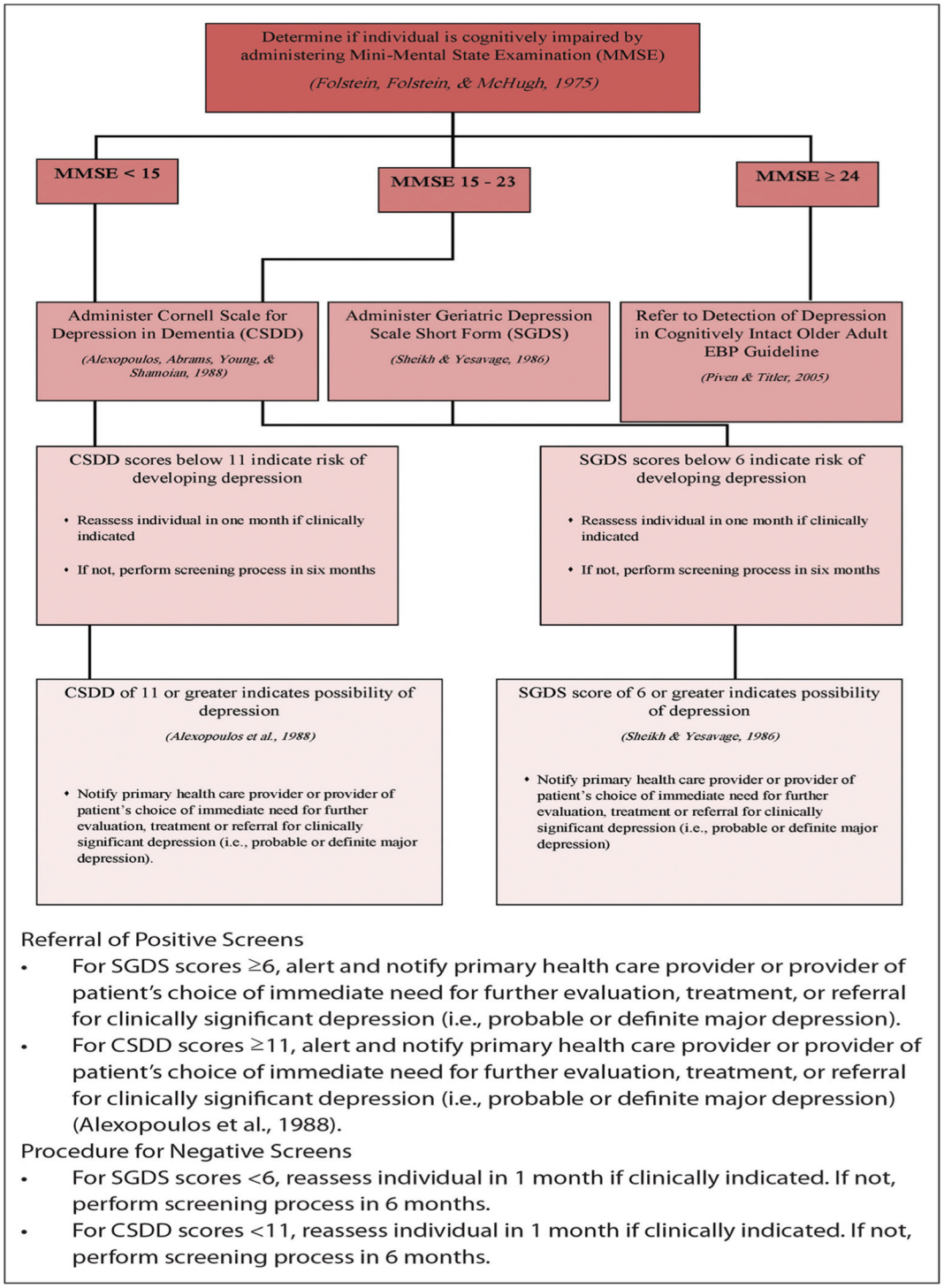

Fig. 1. Evidence-based practice guideline for depression detection in older adults with dementia (Brown et al., 2015).

The project director developed a 20-minute slide presentation on depression in individuals with dementia and the depression screening process based on the Brown et al. (2015) algorithm. Implementation tools included laminated fliers for each clinic room, copies of the CSDD and GDS-SF screening tools, copies of the slide presentation, a journal article supporting the evidence-based algorithm, and an evidence-based journal article on neuroprotective anti-depressant treatments. The materials were placed in binders which were distributed to each provider and the nursing staff.

An educational meeting was held for nursing staff and providers. The clinicians identified perceived barriers, one of which was lack of standardization of the cognitive screening tools in their practice setting. Clinicians and the project director concluded that the algorithm should be modified to best fit the clinic setting. Therefore, clinicians would use their own judgment when selecting a cognitive assessment tool, then based on the diagnosis of MCI versus dementia, they would select the appropriate depression screening tool. Patients that screened positive were to follow-up in one-month for re-screening and evaluation of progress and treatment plan. Due to the changes, a second provider education session was provided a month later to review the revised algorithm (see Fig. 2). In addition to the slide presentation, a live demonstration utilizing the CSDD was provided.

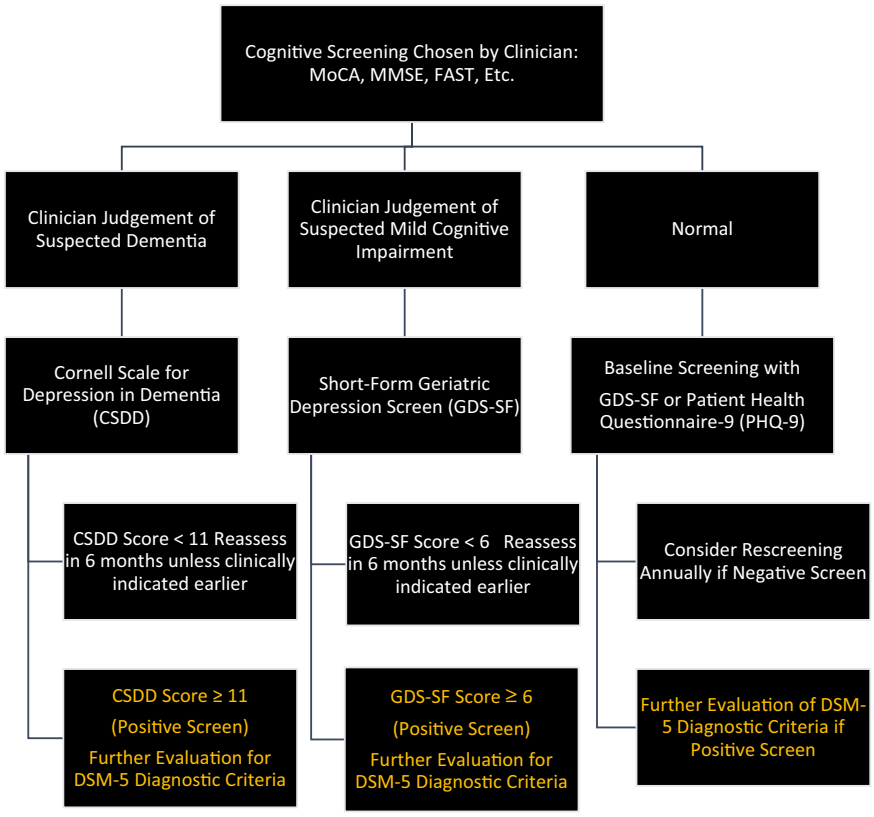

Fig. 2. Modified algorithm for depression detection in older adults with dementia.
*Provider referral for positive screen indicated further evaluation and treatment to consulting psychiatry service.

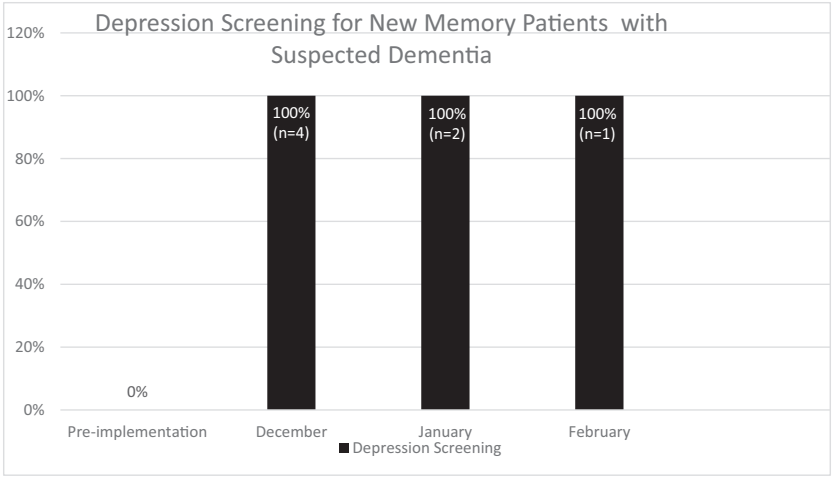

Fig. 3. Percentage of new memory patients screened for depression.

Pre and post-implementation surveys were developed using the University of Iowa Qualtrics survey and data collection Software. The 15-question survey included true/false, Likert scale, and multiple-choice style questions focused on: knowledge of the depression screening tools based on neurocognitive diagnosis, the administration and scoring of depression screening tools, and barriers to depression screening within the clinic. These surveys were exported and printed due to clinician preference to write answers versus complete electronically. The pre-surveys were administered 15 min prior to the provider education presentation, and the post-surveys were completed within the hour after the presentation. All pre- and post-surveys were submitted anonymously and without any identifiers.

One nurse practitioner (NP) opted to participate in the evidence-based practice project and two clinicians opted out. Each new memory patient was assessed by the NP with a full cognitive evaluation and selected cognitive tool. The GDS-SF or the CSDD screen was administered accordingly to the patient's MCI versus dementia diagnosis. The GDS-SF and CSDD forms were not integrated into the electronic health record (EHR), and thus paper forms were utilized. Since the setting did not allow for student access to the EHR, the NP recorded data on a spreadsheet at baseline and monthly for three consecutive months. Data collected included medical record number, dementia stage, the screening tool utilized, GDS-SF or CSDD scores, and rescreening scores if performed at a one-month follow-up visit. If rescreening occurred at follow-up, the re-screen score was included in the data collection. Data was collected for three months post-implementation. The project

director reviewed data collection during and upon completion of the project.

Results

Of the three clinicians in the memory care clinic, only one participated in this evidence-based project during the months December, January, and February. No patients were screened for depression prior to this project. The NP utilized appropriate screening tools based on the modified algorithm. Following project implementation, 100% of the NP's new memory patients were screened for depression (see Fig. 3). Seven new memory patients were screened: 6 diagnosed with MCI were screened with the GDS-SF and 1 diagnosed with moderate dementia was screened with the CSDD. Thus, all patients were screened with the appropriate corresponding depression screens according to their neurocognitive diagnosis.

During the 3-month evaluation period, one patient had a positive depression screen for the GDS-SF and no patients had a positive screen for the CSDD. The patient with a positive GDS-SF was already taking an anti-depressant. In this situation, the NP increased the dosage and recommended a one-month follow-up. Unfortunately, the patient was not seen within the time frame due to a delayed follow-up appointment.

For the participating NP, knowledge of depression screening in individuals with dementia increased from a baseline score of 67% to a score of 95% (see Fig. 4). The other two clinicians not participating in the project, attended the education and took the surveys. Their baseline scores of 43% and 71% increased to a score of 100%.

Discussion

Key stakeholders were involved in the project planning process, however, only one of three clinicians adopted the practice change due to a perceived lack of time for screening. There were concerns that the CSDD was less feasible due to the time needed to interview both the patient and the caregiver. The project director contacted the creator of the CSDD and determined that the patient's caregiver could complete their portion of the screen in the waiting area in order to save time. However, the process change did not alter the decision of the two non-participating providers. The NP who did participate in the project began screening all of her patients for depression and plans to continue utilizing the GDS or PHQ-9 screening tools, but the CSDD was not considered for sustainability due to lack of time.

Limitations and barriers

Barriers were identified during project implementation. Shortly before the project was implemented, the hospital initiated a policy requiring nurses to administer the PHQ-2 and if positive, the PHQ-9 for depression screening. Not all clinicians had knowledge of these screens being performed or incorporated into the EHR and this was discovered after the provider education meeting. These issues were addressed with key stakeholders and the project director encouraged them to utilize the depression screening tools within this project, as these were appropriate for the patient population within the memory clinic. However, these changes were not accepted into practice and the PHQ-9 continues to be administered by nursing staff due to hospital policy.

Time constraints were reported by non-participating providers as a barrier to participating. The non-participating providers declined interest throughout the duration of data collection. The NP who participated primarily treats osteoporosis patients, which limited the number of memory clinic patients seen. The lack of clinician buy-in was seen as a barrier to promote the extension of project implementation, which may have provided an increase in data collection.

Another barrier was the lack of information technology (IT) support personnel for EHR integration. The shortage of IT personnel resulted in the hospital prioritizing other EHR projects. Therefore, paper screening forms were utilized for this project, which may have been more cumbersome for providers.

Conclusions

There is supporting evidence for using depression screening tools for individuals with suspected dementia. Continued research is necessary to identify and/or develop the best tools to use at different stages across

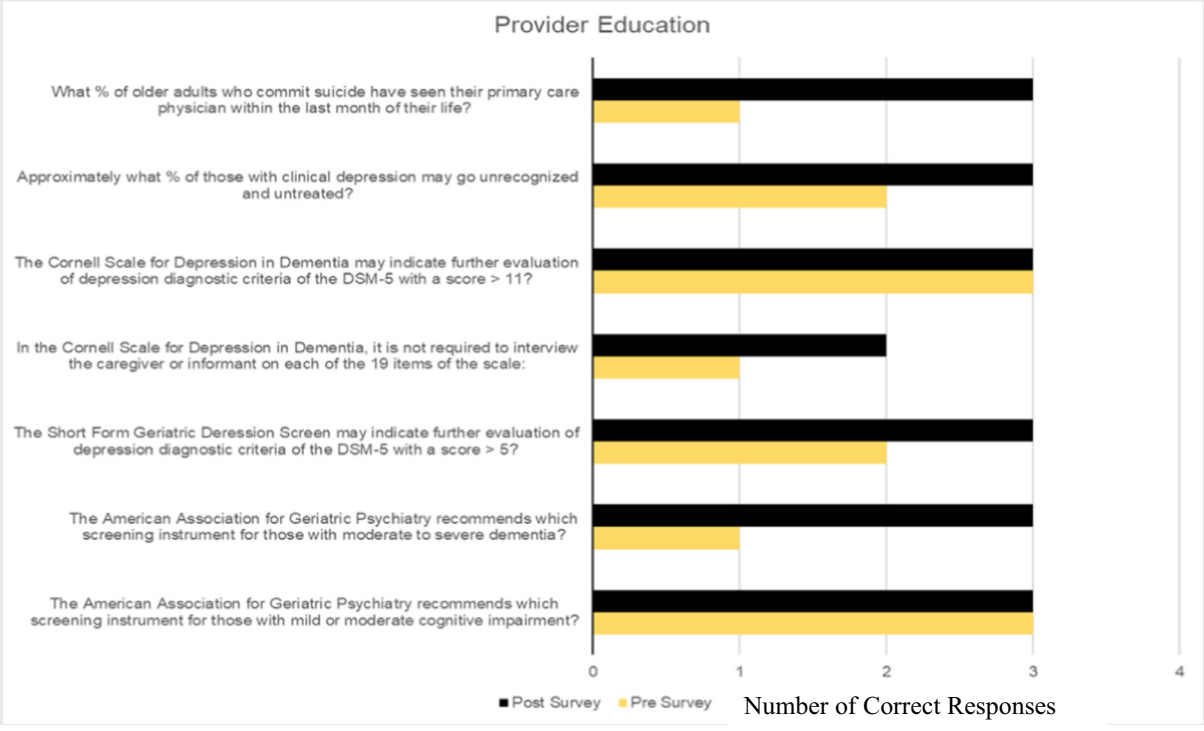

Fig. 4. Clinician knowledge of appropriate utilization of depression screening tools (n = 3).

the cognitive spectrum (Greenberg et al., 2004). Utilizing the Brown, Raue, and Halpert algorithm (2015) may assist nurse practitioners to address the complex bio-psycho-social-spiritual needs of patients with suspected dementia. In order to bridge the gaps between research and clinical practice, further work is needed to identify implementation strategies that can overcome perceived time constraints and other clinician barriers. This study illustrates the challenges implementing practice algorithms due to time constraints, lack of clinician buy-in, and coordination of policy changes within an organization.

Declaration of competing interest

The author declares there is no conflicts of interest to disclose.

Acknowledgment

Thank you to the clinicians and nursing staff at this project setting, as well as my mentor and practice change champion, Dr. Scholten, DNP, FNP-BC.

A special thank you for the guidance from faculty advisors and program directors, Dr. Newman and Dr. Wesemann, faculty chair Dr. Butcher, and Dr. Foote for her review of this manuscript.

Funding

This project did not receive any grant funding from agencies in the public, commercial, or not-for-profit sectors.

References

Alexopoulos, G. S., & Abrams, R. C. (1991). Depression in Alzheimer's disease. *Psychiatric Clinics of North America, 14*(2), 327–340. https://doi.org/10.1016/S0193-953X(18)30310-1.

Alexopoulos, G.S., Abrams, R.C., Young, R.C., & Shamoian, C.A. (1988a). Cornell scale for depression in dementia. Biological Psychiatry, 23(3), 271–284. doi: https://doi.org/10.1016/0006-3223(88)90038-8 Doi: https://doi.org/10.1016/0006-3223(88)90038-8

Alexopoulos, G. S., Abrams, R. C., Young, R. C., & Shamoian, C. A. (1988b). Use of the Cornell Scale in nondemented patients. *Journal of the American Geriatrics Society, 36*(3), 230–236. https://doi.org/10.1111/j.1532-5415.1988.tb01806.x.

Alzheimer"s Association (2018). Alzheimer's and dementia: What is dementia? Retrieved from https://www.alz.org/what-is-dementia.asp.

American Geriatrics Society and American Association for Geriatric Psychiatry (2003). Consensus statement on improving the quality of mental health care in U.S. nursing homes: Management of depression and behavioral symptoms associated with dementia. *Journal of the American Geriatrics Society, 51*(9), 1287–1298. https://doi.org/10.1046/j.1532-5415.2003.51415.x.

American Psychiatric Association (2013). Depressive disorders. *Diagnostic and statistical manual of mental disorders* (pp. 155–188). (5th ed.). .

Brodaty, H., & Arasaratnam, C. (2012). Meta-analysis of nonpharmacological interventions for neuropsychiatric symptoms of dementia. *The American Journal of Psychiatry, 169*(9), 946–953. https://doi.org/10.1176/appi.ajp.2012.11101529.

Brown, E. L., Raue, P. J., & Halpert, K. (2015). Evidence-based practice guideline: Depression detection in older adults with dementia (H. Butcher, Ed.). *Journal of Gerontological Nursing, 41*(11), 15–21. https://doi.org/10.3928/00989134-20151015-03.

Charney, D. S., Reynolds, C. F., III, Lewis, L., Lebowitz, B. D., Sunderland, T., Alexopoulos, G. S., ... Young, R. C. (2003). Depression and Bipolar Support Alliance consensus statement on the unmet needs in diagnosis and treatment of mood disorders in late life. *Archives of General Psychiatry, 60*(7), 664–672. https://doi.org/10.1001/archpsyc.60.7.664.

Creavin, S. T., Wisniewski, S., Noel-Storr, A. H., Trevelyan, C. M., Hampton, T., Rayment, D., ... Cullum, S. (2016). Mini-Mental State Examination (MMSE) for the detection of dementia in clinically unevaluated people aged 65 and over in community and primary care populations. *Cochrane Database of Systematic Reviews*(Issue 1), CD011145. https://doi.org/10.1002/14651858.CD011145.pub2.

Development Group of the Clinical Practice Guideline on the Comprehensive Care of People with Alzheimer"s Disease and Other Dementias (2010). Clinical practice guideline on the comprehensive care of people with Alzheimer's disease and other dementias. Retrieved from: http://www.guiasalud.es/GPC/GPC_484_Alzheimer_AIAQS_comp_eng.pdf.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state": A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12*(3), 189–198. https://doi.org/10.1016/0022-3956(75)90026-6.

Greenberg, L., Lantz, M. S., Likourezos, M., Burack, O. R., Chichin, E., & Carter, J. (2004). Screening for depression in nursing home palliative care patients. *Journal of Geriatric Psychiatry and Neurology, 17*(4), 212–218. https://doi.org/10.1177/0891988704269817.

Hancock, P., & Larner, A. J. (2009). Clinical utility of Patient Health Questionnaire-9 (PHQ-9) in memory clinics. *International Journal of Psychiatry in Clinical Practice, 13*(3), 188–191. https://doi.org/10.1080/13651500802684500.

Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14*(3), 175–182. https://doi.org/10.1111/wvn.12223.

Jeon, Y.-H., Govett, J., Low, L.-F., Chenoweth, L., McNeill, G., Hoolahan, A., & O'Connor, D. (2013). Care planning practices for behavioural and psychological symptoms of dementia in residential aged care: A pilot of an education toolkit informed by the Aged Care Funding Instrument. *Contemporary Nurse, 44*(2), 156–169. https://doi.org/10.5172/conu.2013.44.2.156.

Knapskog, A. B., Barca, M., & Engedal, K. (2013). Prevalence of depression among memory clinic patients as measured by the Cornell Scale of Depression in Dementia. *Journal of Aging and Mental Health, 18*(5), 579–587. https://doi.org/10.1080/13607863.2013.827630.

Kørner, A., Lauritzen, L., Abelskov, K., Gulmann, N., Brodersen, A., Wedervang-Jensen, T., & Kjeldgaard, K. (2006). The geriatric depression scale and the Cornell scale for depression in dementia. A validity study. *Nordic Journal of Psychiatry, 60*(5), 360–364. https://doi.org/10.1080/08039480600937066.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2003). The Patient Health Questionnaire-2: validity of a two-item depression screener. *Medical Care, 41*(11), 1284–1292. https://doi.org/10.1097/01.MLR.0000093487.78664.3C.

McCabe, M. P., Davison, T., Mellor, D., George, K., Moore, K., & Ski, C. (2006). Depression among older people with cognitive impartment: Prevalence and detection. *International Journal of Geriatric Psychiatry, 21*(7), 633–644. https://doi.org/10.1002/gps.1538.

Modrego, P. J., & Ferrández, J. (2004). Depression in patients with mild cognitive impairment increases the risk of developing dementia of Alzheimer type: A prospective cohort study. *Archives of Neurology, 61*(8), 1290–1293. https://doi.org/10.1001/archneur.61.8.1290.

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., & Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society, 53*(4), 695–699. https://doi.org/10.1111/j.1532-5415.2005.53221.x.

Olin, J. T., Katz, I. R., Meyers, B. S., Schneider, L. S., & Lebowitz, B. D. (2002). Provisional diagnostic criteria for depression of Alzheimer disease: Rationale and background. *American Journal of Geriatric Psychiatry, 10*(2), 129–141. https://doi.org/10.1097/00019442-200203000-00004.

Panza, F., Frisardi, V., Capurso, C., D'Introno, A., Colacicco, A. M., Imbimbo, B. P., & Solfrizzi, V. (2010). Late-life depression, mild cognitive impairment, and dementia: Possible continuum? *American Journal of Geriatric Psychiatry, 18*(2), 98–116. https://doi.org/10.1097/JGP.0b013e3181b0fa13 (00019442-201002000-00003).

Peters, M. E., Rosenberg, P. B., Steinberg, M., Norton, M. C., Welsh-Bohmer, K. A., Hayden, K. M., & Investigators, C. C. (2013). Neuropsychiatric symptoms as risk factors for progression from CIND to dementia: the Cache County Study. *The American Journal of Geriatric Psychiatry, 21*(11), 1116–1124. https://doi.org/10.1016/j.jagp.2013.01.049.

Rapp, M. A., Schnaider-Beeri, M., Wysocki, M., Guerrero-Berroa, E., Grossman, H. T., Heinz, A., & Haroutunian, V. (2011). Cognitive decline in patients with dementia as a function of depression. *The American Journal of Geriatric Psychiatry : Official Journal of the American Association for Geriatric Psychiatry, 19*(4), 357–363. https://doi.org/10.1097/JGP.0b013e3181e898d0.

Sheikh, J. I., & Yesavage, J. A. (1986). Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. *Clinical Gerontologist: The Journal of Aging and Mental Health, 5*(1–2), 165–173. https://doi.org/10.1300/J018v05n01_09.

Smith, T., Gildeh, N., & Holmes, C. (2007). The Montreal Cognitive Assessment: Validity and utility in a memory clinic setting. *The Canadian Journal of Psychiatry, 52*(5), 329–332 https://doi.org/10.1177/070674370705200508.

Snowdon, J., & Fleming, R. (2008). Recognising depression in residential facilities: An Australian challenge. *International Journal of Geriatric Psychiatry, 23*, 295–300. https://doi.org/10.1002/gps.1877.

Spector, A., Orrell, M., & Goyder, J. (2013). A systematic review of staff training interventions to reduce the behavioural and psychological symptoms of dementia. *Ageing Research Reviews, 12*(1), 354–364. https://doi.org/10.1016/j.arr.2012.06.005.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Patient Health Questionnaire Primary Care Study Group (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA, 282*(18), 1737–1744. https://doi.org/10.1001/jama.282.18.1737.

U.S. Preventive Services Task Force (2016). Final recommendation statement: Depression in adults: Screening. Retrieved from https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/depression-in-adults-screening1.

Winter, Y., Korchounov, A., Zhukova, T. V., & Bertschi, N. E. (2011). Depression in elderly patients with Alzheimer dementia or vascular dementia and its influence on their quality of life. *Journal of Neurosciences in Rural Practice, 2*(1), 27–32. https://doi.org/10.4103/0976-3147.80087.

World Health Organization (2017). Media centre: Dementia. Retrieved from http://www.who.int/mediacentre/factsheets/fs362/en/.

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1982). Development and validation of a geriatric depression screening scale: a preliminary report. *Journal of Psychiatric Research, 17*(1), 37–49. https://doi.org/10.1016/0022-3956(82)90033-4.