An Interdisciplinary Approach to Educating Medical Students About Dementia Assessment and Treatment Planning

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Background: Many general practitioners consider dementia care beyond their clinical domain and feel that dementia assessment and treatment should be addressed by specialists, such as geriatricians, geriatric psychiatrists, or neurologists. An urgent need exists to educate all medical trainees in dementia care, regardless of their specialization interests.

Observations: We developed a multicomponent, experiential, brief curriculum using team-based learning to expose senior medical students who rotated through the US Department of Veterans Affairs Memory Disorders Clinic at the Central Arkansas Veterans Healthcare System in Little Rock to an interdisciplinary assessment of dementia. The curriculum included didactics, clinical experience, and team-based learning. In pre- and postevaluation, students rated their perception of the role of interdisciplinary team members in assessing and managing dementia, their personal abilities to assess cognition, behavioral problems, caregiver burden, and their perception of the impact of behavioral problems on dementia care.

Conclusions: Dementia knowledge gaps were prevalent in this cohort of senior medical students. Providing interdisciplinary geriatric educational experience improved students perception of their ability to assess for dementia and their recognition of the roles of interdisciplinary team members. Plans are in place to continue and expand the program to other complex geriatric syndromes.

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The global burden of dementia is increasing at an alarming pace and is estimated to soon affect 81 million individuals worldwide.[1] The World Health Organization and the Institute of Medicine have recommended greater dementia awareness and education.[2,3] Despite this emphasis on dementia education, many general practitioners consider dementia care beyond their clinical domain and feel that specialists, such as geriatricians, geriatric psychiatrists, or neurologists should address dementia assessment and treatment.[4] Unfortunately, the geriatric health care workforce has been shrinking. The American Geriatrics Society estimates the need for 30,000 geriatricians by 2030, although there are only 7,300 board-certified geriatricians currently in the US.[5] There is an urgent need for educating all medical trainees in dementia care regardless of their specialization interest. As the largest underwriter of graduate medical education in the US, the US Department of Veterans Affairs (VA) is well placed for rolling out focused dementia education. Training needs to be practical, brief, and responsive to knowledge gaps to reach the most trainees.

Despite growing emphasis on geriatric training, many medical students have limited experience with patients with dementia or their caregivers, lack exposure to interdisciplinary teams, have a poor attitude toward geriatric patients, and display specific knowledge gaps in dementia assessment and management.[6-9] Other knowledge gaps noted in medical students included assessing behavioral problems, function, safety, and caregiver burden. Medical students also had limited exposure to interdisciplinary team dementia assessment and management.

Our goal was to develop a multicomponent, experiential, brief curriculum using team-based learning to expose senior medical students to interdisciplinary assessment of dementia. The curriculum was developed with input from the interdisciplinary team to address dementia knowledge gaps while providing an opportunity to interact with caregivers. The curriculum targeted all medical students regardless of their interest in geriatrics. Particular emphasis was placed on systems-based learning and the importance of teamwork in managing complex conditions such as dementia. Students were taught that incorporating interdisciplinary input would be more effective

during dementia care planning rather than developing specialized knowledge.

METHODS

Our team developed a curriculum for fourth-year medical students who rotated through the VA Memory Disorders Clinic as a part of their geriatric medicine clerkship at the University of Arkansas for Medical Sciences in Little Rock. The Memory Disorders Clinic is a consultation practice at the Central Arkansas Veterans Healthcare System (CAVHS) where patients with memory problems are evaluated by a team consisting of a geriatric psychiatrist, a geriatrician, a social worker, and a neuropsychologist. Each specialist addresses specific areas of dementia assessment and management. The curriculum included didactics, clinical experience, and team-based learning.

Didactics

An hour-long didactic session lead by the team geriatrician provided a general overview of interdisciplinary assessment of dementia to groups of 2 to 3 students at a time. The geriatrician presented an overview of dementia types, comorbidities, medications that affect memory, details of the physical examination, and laboratory, cognitive, and behavioral assessments along with treatment plan development. Students also learned about the roles of the social worker, geriatrician, neuropsychologist, and geriatric psychiatrist in the clinic. Pictographs and pie charts highlighted the role of disciplines in assessing and managing aspects of dementia.

The social work evaluation included advance care planning, functional assessment, safety assessment (driving, guns, wandering behaviors, etc), home safety evaluation, support system, and financial evaluation. Each medical student received a binder with local resources to become familiar with the depth and breadth of agencies involved in dementia care. Each medical student learned how to administer the Zarit Burden Scale to assess caregiver burden.[10] The details of the geriatrician assessment included reviewing medical comorbidities and medications contributing to dementia, a physical examination, including a focused neurologic examination, laboratory assessment, and judicious use of neuroimaging.

TABLE 1 Take-Home Points for the Team-Based Learning Session

- Importance of history of onset and progression in discerning types of dementia
- Comorbidities and medications associated with onset/worsening of dementia
- Focused physical examination to rule out neurologic conditions
- Cognitive testing ranging from bedside tests to neuropsychological assessments
- Assessment and management of behavioral problems in dementia
- Safety evaluation, including function, abuse, firearms, and driving
- Assessment of caregiver burden
- Systems-based learning and resource utilization for dementia care

The neuropsychology assessment education included a battery of tests and assessments. The global screening instruments included the Modified Mini-Mental State examination (3MS), Montreal Cognitive Assessment (MoCA), and Saint Louis University Mental Status examination (SLUMS).[11-13] Executive function is evaluated using the Trails Making Test A and Trails Making Test B, Controlled Oral Word Association Test, Semantic Fluency Test, and Repeatable Battery for the Assessment of Neuropsychological Status test. Cognitive tests were compared and age-, education-, and race-adjusted norms for rating scales were listed if available. Each student was expected to show proficiency in ≥ 2 cognitive screening instruments (3MS, MoCA, or SLUMS). The geriatric psychiatry assessment included clinical history, onset, and course of memory problems from patient and caregiver perspectives, the Neuropsychiatric Inventory for assessing behavioral problems, employing the clinical dementia rating scale, integrating the team data, summarizing assessment, and formulating a treatment plan.[14]

Clinical

Students had a single clinical exposure. Students followed 1 patient and his or her caregiver through the team assessment and observed each provider's assessment to learn interview techniques to adapt to the patient's sensory or cognitive impairment and become familiar with different tools and devices used in the dementia clinic, such as hearing amplifiers. Each specialist provided hands-on experience. This encounter helped the students connect with caregivers and appreciate their role in patient care.

Systems learning was an important component integrated throughout the

TABLE 2 Reported Ability to Deliver Excellent or Very Good Dementia Care (N = 100)[a]

Skills	Preintervention, %	Postintervention, %	P Value[b]
Assess dementia using interdisciplinary team	10	96	< .01
Use ≥ 2 instruments to assess cognition	18	92[c]	< .01
Use instrument for caregiver burden	7	78[c]	< .01
Assess behavioral problems in dementia	7	88	< .01
Impact of behavioral problems in dementia	45	98	< .01

[a]Rated on 5-point Likert scale (poor, fair, good, very good, excellent).
[b]Pre- and postmeasures were compared using the McNemar test for paired data.
[c]99 responses received.

clinical experience. Examples include using video teleconferences to communicate findings among team members and electronic health records to seamlessly obtain and integrate data. Students learned how to create worksheets to graph laboratory data such as B12, thyroid-stimulating hormone, and rapid plasma regain levels. Student gained experience in using applications to retrieve neuroimaging data, results of sleep studies, and other data. Many patients had not received the results of their sleep study, and students had the responsibility to share these reports, including the number of apneic episodes. Students used the VA Computerized Patient Record System for reviewing patient records. One particularly useful tool was Joint Legacy Viewer, a remote access tool used to retrieve data on veterans from anywhere within the US. Students were also trained on medication and consult order menus in the system.

Team-Based Learning

The objectives of the team-based learning section were to teach students basic concepts of integrating the interdisciplinary assessment and formulating a treatment plan, to provide an opportunity to present their case in a group format, to discuss the differential diagnosis, management and treatment plan with a geriatrician in the team-based learning format, and to answer questions from other students. The instructors developed a set of prepared take-home points (Table 1). The team-based learning sessions were structured so that all take-home points were covered.

Evaluations

Evaluations were performed before and immediately after the clinical experience. In preevaluation, students reported the frequency of their participation in an interdisciplinary team assessment of any condition and specifically for dementia. In pre- and postevaluation, students rated their perception of the role of interdisciplinary team members in assessing and managing dementia, their personal abilities to assess cognition, behavioral problems, caregiver burden, and their perception of the impact of behavioral problems on dementia care. A Likert scale (poor = 1; fair = 2; good = 3; very good = 4; and excellent = 5) was employed (eApendices 1 and 2 can be found at doi:10.12788/fp.0052). The only demographic information collected was the student's gender. Semistructured interviews were conducted to assess students' current knowledge, experience, and needs. These interviews lasted about 20 minutes and collected information regarding the students' knowledge about cognitive and behavioral problems in general and those occurring in dementia, their experience with screening, and any problems they encountered.

Statistical Analysis

Student baseline characteristics were assessed. Pre- and postassessments were analyzed with the McNemar test for paired data, and associations with experience were evaluated using χ^2 tests. Ratings were dichotomized as very good/excellent vs poor/fair/good because our educational goal was "very good" to "excellent" experience in dementia care and to avoid expected small cell counts. Two-sided $P < .05$ indicated statistical significance. Data were analyzed using SAS Enterprise Guide v5.1.

RESULTS

One hundred fourth-year medical students participated, including 54 women. Thirty-six percent reported they had not previously attended an interdisciplinary team assessment for dementia, while 18% stated that they had attended only 1 interdisciplinary team assessment for dementia.

Before the education, students rated their dementia ability as poor. Only 2% (1 of 54), of those with 0 to 1 assessment experience rated their ability for assessing dementia with an interdisciplinary team format as very good/excellent compared with 20% (9/46) of those previously attending ≥ 2 assessments (P = .03); other ratings of ability were not associated with prior experience.

There was a significant change in the students' self-efficacy ratings pre- to post-assessment (P < .05) (Table 2). Only 10% rated their ability to assess for dementia as very good/excellent in before the intervention compared with 96% in postassessment (P < .01). Students' perception of the impact of behavioral problems on dementia care improved significantly (45% to 98%, P < .01). Similarly, student's perception of their ability to assess behavioral problems, caregiver burden, and cognition improved significantly from 7 to 88%; 7 to 78%, and 18 to 92%, respectively (P < .01). Students perception of the role of social worker, neuropsychologist, geriatrician, and geriatric psychiatrist also improved significantly for most measures from 81 to 98% (P = .02), 87 to 98% (P = .05), 94 to 99% (P = .06), and 88 to 100% (P = .01), respectively.

The semistructured interviews revealed that awareness of behavioral problems associated with dementia varied for different behavioral problems. Although many students showed familiarity with depression, agitation, and psychosis, they were not comfortable assessing them in a patient with dementia. These students were less aware of other behavioral problems such as disinhibition, apathy, and movement disorders. Deficits were noted in the skill of administering commonly used global cognitive screens, such as the Mini-Mental State Examination (MMSE).[15]

In semistructured interviews, only 7% of senior medical students were comfortable assessing behavioral problems associated with dementia. Most were not aware of any validated rating scale to assess neuropsychiatric symptoms. Similarly, only 7% of students were comfortable assessing caregiver burden, and most were not aware of any validated rating scale to assess caregiver burden. Only 1 in 5 students were comfortable using 2 cognitive screens to assess cognitive deficits. Many students stated that they were not routinely expected to perform common cognitive screens, such as the MMSE during their medical training except students who had expressed an interest in psychiatry and were expected to be proficient in the MMSE. Most students were making common mistakes, such as converting the 3-command task to 3 individual single commands, helping too much with serial 7s, and giving too much positive feedback throughout the test.

DISCUSSION

Significant knowledge gaps regarding dementia were found in our study, which is in keeping with other studies in the area. Dementia knowledge deficits among medical trainees have been identified in the United Kingdom, Australia, and the US.[6-9]

In our study, a brief multicomponent experiential curriculum improved senior medical students' perception and self-efficacy in diagnosing dementia. This is in keeping with other studies, such as the PAIRS Program.[7] Findings from another study indicated that education for geriatric-oriented physicians should focus on experiential learning components through observation and interaction with older adults.[16]

A background of direct experience with older adults is associated with more positive attitudes toward older adults and increased interest in geriatric medicine.[16] In our study, the exposure was brief; therefore, the results could not be compared with other long-term exposure studies. However, even with this brief intervention most students reported being comfortable with assessing caregiver burden (78%), behavioral problems of dementia (88%), and using ≥ 2 cognitive screens (92%). Comfortable in dementia assessment increased after the intervention from 10% to 96%. This finding is encouraging because brief multicomponent dementia education can be devised easily. This finding needs to be taken with caution because we did not conduct a formal skills evaluation.

A unique component of our experience was to learn medical students' perception about the impact of neuropsychiatric

symptoms on the trajectory, outcomes, and management of dementia. These symptoms included delusions, hallucinations, agitation, depression, anxiety, euphoria, apathy, disinhibition, irritability, motor disturbance, nighttime behaviors, and appetite and eating. Less than half the students thought that neuropsychiatric symptoms had a significant impact on dementia before the experience. Through didactics, systematic assessment of neuropsychiatric symptoms and interaction with caregivers, > 98% of students learned that these symptoms have a significant impact on dementia management.

This experience also emphasized the role of several disciplines in dementia assessment and management. Students' experience positively influenced appreciation of the role of the memory clinic team. Our hope is that students will seek input from social workers, neuropsychologists, and other team members when working with patients with dementia or their caregivers. The common reason why primary care physicians focus on an exclusive medical model is the time commitment for communicating with an interdisciplinary team. Students experienced the feasibility of the interdisciplinary team involvement and how technology could be used for synchronous and asynchronous communication among team members. Medical students also were introduced to complex billing codes used when ≥ 3 disciplines assess/manage a geriatric patient.

Limitations
This study is limited by the lack of long-term follow-up evaluations, no metrics for practice changes clinical outcomes, and implementation in a single medical school. The postexperience evaluation in this study was performed immediately after the intervention. Long-term follow-up would inform whether the changes noted are durable. Because of the brief nature of our intervention, we do not believe that it would change practice in clinical care. It will be informative to follow this cohort of students to study whether their clinical approach to dementia care changes. The intervention needs to be replicated in other medical schools and in more heterogeneous groups to generalize the results of the study.

CONCLUSIONS
Senior medical students are not routinely exposed to interdisciplinary team assessments. Dementia knowledge gaps were prevalent in this cohort of senior medical students. Providing interdisciplinary geriatric educational experience improved their perception of their ability to assess for dementia and their recognition of the roles of interdisciplinary team members. Plans are in place to continue and expand the program to other complex geriatric syndromes.

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