BRIEF REPORTS

Use of a Geriatric Home Visit Experience to Teach Medical Students the Functional Status Assessment

Ericka E. Tung, MD, MPH and Matthew R. Thomas, MD

Mayo Clinic College of Medicine, Rochester, MN, USA.

INTRODUCTION: Functional status measures strongly predict hospital outcomes and mortality, yet teaching of these measures is often missing from medical schools' curricula. To address this deficiency, we developed a Geriatric Home-based Assessment (GHA) module for third-year medical students. The module was composed of a workshop and two to three home visits.

OBJECTIVE: To determine whether the GHA module would improve students' knowledge and proficiency in the functional status assessment.

PROGRAM EVALUATION: Students completed a validated questionnaire and evaluated a standardized patient in an Observed Structured Clinical Examination (OSCE). Scores from students completing the GHA were compared to the scores of students without this experience.

RESULTS: Thirty-one students participated in the GHA module, and 19 students were in the control group. The mean score on the written assessment was 87% among GHA students vs. 46% in the control group ($p < 0.001$). The mean clinical examination score of the intervention group was also better than that of the control group (76% vs. 46%, $p < 0.001$).

CONCLUSIONS: Our GHA module was effective in improving students' knowledge and proficiency in the functional status assessment. "Hands on" experiences like the GHA allow students to develop a solid foundation for assessing functional status and mobility.

KEY WORDS: geriatric assessment; functional status; medical students.
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BACKGROUND

Functional disability is present in up to 30% of the burgeoning population of older adults.^{1,2} Independent of etiology, functional disability is associated with an increased risk of institutionalization, mortality, and negative hospital-related outcomes.^{3–6} Despite its widely accepted value, geriatric functional assessment⁷ has not been formally integrated into most medical schools' geriatric curricula,⁸ perhaps explaining

why learners at all levels often lack the skills necessary to help patients optimize functional independence.⁹

Our Geriatric Medicine fellows utilize in-home comprehensive geriatric assessments (CGA) to identify geriatric syndromes and coordinate medical and social services for older adults at high risk for functional deterioration. In 2006, we began to use this program as a platform for teaching medical students about functional status and independence in the community. The primary goals of this educational innovation were to develop students' skills in functional status assessment and to enhance their ability to apply this knowledge in the clinical setting.

METHODS

Program Description

The Geriatric Home-based Assessment (GHA) module was developed for third-year students during their Medicine Clerkship. This community-based experience introduces the concept of functional status to students with a short workshop and a day of supervised in-home geriatric assessments.

At the 1.25-h workshop (developed and conducted by a board-certified geriatrician), students were taught how to conduct a geriatric functional status and mobility assessment (Table 1). Students then performed home visits under the supervision of a Geriatric Medicine fellow. Pairs of students visited the homes of two to three vulnerable elders (identified with the Vulnerable Elders Survey, and therefore eligible for free home-based comprehensive geriatric assessments).¹⁰

Students performed the functional status and mobility portions of the CGA, utilizing a structured form that guided them to collect information about functional status, mobility, and falls. Students observed the fellow's assessment of other geriatric domains. Next, the students, fellow, older adult and caregivers reviewed results of the assessment and worked together to devise an "Action Plan" aimed at promoting the older adult's functional independence. During the action planning process, the Geriatric Medicine fellow and student suggested available community-based services that might be helpful to the older adult. The students then wrote a summary letter to the older adult.

Setting and Study Population

Mayo Medical School is located in Rochester, Minnesota. Third-year students are required to complete a 6-week clerkship in Internal Medicine (IM) at one of three Mayo sites: Rochester, Minnesota; Jacksonville, Florida; or Scottsdale, Arizona. For logistical reasons, the GHA was only offered at

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Table 1. Geriatric Home Assessment Workshop Domains and Instructional Methods

Geriatric domain	Instructional methods
Basic geriatric assessment principles	Didactic Orientation to module with review of elements included in syllabus
Assessment of functional status	Discussion Role play (assessment of Activities of Daily Living and Instrumental Activities of Daily Living)
Assessment of fall-related risk factors	Case-based discussion Didactic Journal reading (included in syllabus) with discussion of article
Performance-based measures of mobility	Demonstration Role play
Community-based services for functionally disabled adults	Case-based discussion Students later demonstrate utilization of services through development of an Action Plan letter

the Rochester campus. All students who rotated at this site had the opportunity to participate in the GHA during their IM clerkship. Students rotating at all sites received geriatric teaching provided by general internists in the midst of caring for hospitalized and ambulatory elderly patients. Except for the GHA pilot, students' experience in the clerkship across sites was comparable with respect to both process and product measures (data not shown).¹¹ Students' participation in the GHA module had no influence on course grading. This study was deemed exempt from full review by the Mayo Clinic IRB.

Students who rotated at the Jacksonville and Scottsdale campuses during the 2006–2007 academic year and seven consecutive students from the subsequent class served as a comparison group for this analysis.

Evaluation Instruments

Knowledge and Attitude Assessment. To assess students' knowledge and attitudes about functional status and mobility, a ten-item questionnaire was developed by the authors. The first eight questions reflected geriatric knowledge, and the final questions reflected attitudes toward performing a geriatric functional assessment. The questionnaire was reviewed by a consensus panel of five board-certified geriatricians and refined

and finalized based on their recommendations. This questionnaire was then administered to four Geriatric Medicine fellows with a mean knowledge score of 89%.

Clinical Skills Assessment. We developed an objective structured clinical examination (OSCE) station to measure students' geriatric assessment skills. The station featured a trained standardized older patient presenting with recurrent falls and gradual functional decline. The scoring system for the station consisted of a standardized checklist with 13 historical items and 4 physical examination items.

Curriculum Assessment. During the clerkship's final week, students were asked to complete the questionnaire. Next, students were given 16 min to evaluate the standardized patient. The station was observed (via a two-way mirror) and reviewed by one of two unblinded faculty internists who utilized the detailed marking scheme to assess the students' performance. Marks were awarded for completion of each step. Students had no knowledge of the assessment instrument. On average, the assessments were completed 3 weeks after the initial orientation workshop and 2 weeks after the students completed their home visits.

Students who did not participate in the GHA also completed the questionnaire and evaluated the same standardized patient.

Statistical Methods and Data Analysis

GHA students' knowledge questionnaires and OSCE-based clinical skills assessments were compared to the results of those comparison students participating in the traditional curriculum. Each group's mean scores were compared with the use of the two-sample t-test.

RESULTS

Thirty-four students had the opportunity to participate in the Geriatric Home Assessment module. Thirty-one of these students completed the entire module and were included in the analysis; two students were excluded because they were not able to attend one or both parts of the module. One student was excluded from the analysis because of logistical difficulties during his OSCE examination. Nineteen students served as a control group.

Table 2. Comparison of Geriatric Functional Status Knowledge and Skills: Geriatric Domain Sub-scores and Summary Scores

Geriatric domain	Range	Usual curriculum (N=19)		GHA module (N=31)		P-value
		Score	SD	Score	SD	
Basic geriatric principles	0–5	2.68	±0.95	4.1	±0.98	<0.001
Assessment of ADLs and IADLs	0–6	1.63	±1.34	4.65	±1.40	<0.001
Fall-related risk assessment	0–10	5.79	±1.32	7.81	±1.19	<0.001
Performance-based assessment of mobility	0–1	0.11	±0.32	0.87	±0.34	<0.001
Community-based services for older adults	0–3	0.95	±0.91	2.26	±0.86	<0.001
Summary scores						
Written assessment of geriatric knowledge	0–8	3.68 (46%)	±2.33 (29.1%)	6.97 (87.1%)	±1.54 (19.2%)	<0.001
OSCE	0–17	7.8 (46%)	±1.87 ± (11%)	13.0 (76.4%)	±1.8 ± (11%)	<0.001

ADL, Activities of daily living

IADL, Instrumental activities of daily living

GHA students performed better than students participating in the usual curriculum on the knowledge assessment (mean score 87.1% vs. 46%, $p < 0.001$; see Table 2). GHA students were also significantly more comfortable performing geriatric assessments in the community than their non-GHA peers ($p < 0.001$), with the majority of GHA students describing themselves as “comfortable” or “very comfortable” performing the functional status assessment.

GHA students also performed better on the OSCE station (Table 2). GHA students were able to identify more of the standardized patient's fall-related risk factors than usual curriculum students (5.8 ± 1.58 vs. 3.84 ± 1.21 , $p < 0.001$). A higher proportion of GHA students than usual curriculum students (87% vs. 11%, $p < 0.0001$) assessed the standardized patient's mobility and functionality with the use of a validated tool (i.e., Timed Up and Go). The mean OSCE station score in the intervention group was significantly better than that of the control group (76.4% vs. 46%, $p < 0.001$).

DISCUSSION

We were able to demonstrate that the GHA module effectively increased students' knowledge and proficiency in the assessment of functional status and mobility. Furthermore, participating students gained unique “real world” experience through the supervised administration of in-home geriatric functional assessments.

Organizations such as the American College of Physicians have stressed the importance of care coordination and integration of care processes throughout the community.¹² Medical practices have subsequently developed various methods of coordinating medical and social service needs of their older patients.^{13,14} In isolation, it may be difficult for medical school leaders to create curricula that effectively teach such systems-based strategies. However, programs like the GHA that immerse students in existing community-based systems of care delivery may allow geriatricians and fellows to teach students practical geriatric principles without allocation of additional resources.

Several limitations to this study exist. First, students selected their clerkship site. This introduces the potential for bias, as the two groups may not have had the same baseline knowledge of the geriatric functional assessment. However, all of the students had identical coursework during the first 2 years of medical school and were unaware of this module's existence when they were selecting the location of their clerkship. Second, students were assessed 2–3 weeks from their GHA experiences, providing evidence of medium-term durability. The durability of their knowledge and skills beyond this period of time is not known. Additionally, for practical purposes functional status examination skills were assessed in a single OSCE station. We did not assess the reliability of this approach. Finally, our results may not be directly generalizable to institutions without a Geriatric Fellowship training program. However, we believe this program could be successfully implemented at any medical college with faculty dedicated to the teaching of geriatric principles.

Community-based experiences like the GHA allow students to actively participate in the care of frail older adults. Data

presented here suggest that a short community-based geriatric module can effectively teach students the fundamentals of the functional status assessment. This opportunity for “hands on” systems-based learning also allows students to directly experience the challenge of geriatric care coordination that is inherent to the care of older adults. It is our hope that the GHA module may serve as a model for other medical schools interested in developing a community-based geriatrics curriculum.

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Conflict of Interest: None disclosed.

Corresponding Author: Ericka E. Tung, MD, MPH; Mayo Clinic College of Medicine, 200 First Street SW, Rochester, MN 55905, USA (e-mail: Tung.ericka@mayo.edu).

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