

Multidimensional Attitudes of Emergency Medicine Residents Toward Older Adults

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Introduction: The demands of our rapidly expanding older population strain many emergency departments (EDs), and older patients experience disproportionately high adverse health outcomes. Trainee attitude is key in improving care for older adults. There is negligible knowledge of baseline emergency medicine (EM) resident attitudes regarding elder patients. Awareness of baseline attitudes can serve to better structure training for improved care of older adults. The objective of the study is to identify baseline EM resident attitudes toward older adults using a validated attitude scale and multidimensional analysis.

Methods: Six EM residencies participated in a voluntary anonymous survey delivered in summer and fall 2009. We used factor analysis using the principal components method and Varimax rotation, to analyze attitude interdependence, translating the 21 survey questions into 6 independent dimensions. We adapted this survey from a validated instrument by the addition of 7 EM-specific questions to measures attitudes relevant to emergency care of elders and the training of EM residents in the geriatric competencies. Scoring was performed on a 5-point Likert scale. We compared factor scores using student t and ANOVA.

Results: 173 EM residents participated showing an overall positive attitude toward older adults, with a factor score of 3.79 (3.0 being a neutral score). Attitudes trended to more negative in successive post-graduate year (PGY) levels.

Conclusion: EM residents demonstrate an overall positive attitude towards the care of older adults. We noted a longitudinal hardening of attitude in social values, which are more negative in successive PGY-year levels. [West J Emerg Med. 2014;15(4):511–517.]

INTRODUCTION

Older adult patients constitute an average of 25-30% of current emergency department (ED) volumes.¹ This is predicted to increase to over 60% at some sites by 2030.² The demand, acuity, and complexity of older patients strain ED services and are more likely to result in adverse health outcomes experienced by this population.^{3,4}

Non-emergency medicine residents have been shown to underestimate the influence of an aging society on their careers, and report they do not enjoy caring for older patients due to the chronic, complex nature of their conditions, need

for frequent family communication, and time pressures in their care.⁵ This is concerning as the attitude of the trainee is key to providing better care to older adults.⁶ Existing literature on the attitudes of medical trainees toward these older adults shows a wide variance from negative to positive.⁷⁻⁹ Attempts to enhance attitudes toward older adults through training have been studied.^{4,10} The objectives of these training efforts have focused on improving attitudes toward older persons and their care as well as on increasing specific geriatrics knowledge and skills.¹¹⁻¹³ The call to improve emergency medicine (EM) training for this population has

resulted in many innovative curricula.¹⁴⁻¹⁹ However, studies have demonstrated little or no relationship between geriatrics knowledge and attitudes.^{2,8,21} No studies have been done on baseline EM resident attitudes regarding elder patients.

We examined baseline attitudes of EM residents at 6 EM residency programs.

OBJECTIVES

Our goal was to identify principle dimensions of baseline EM resident attitudes toward older adults using multidimensional analysis.

METHODS

Six EM residencies participated in this study. We administered a survey for measuring resident attitudes toward older adults by SurveyMonkey® in the summer and fall of 2009. Participation in this study was completely voluntary and anonymous; and approval was obtained from each local institutional review board. The only demographic information collected was the participants' program name and level of training.

We used factor analysis to analyze interdependence of attitudes. Factor analysis combines variables within the attitude questions to create a smaller set of independent factors.²⁴ Factor analysis was used to group attitudes according to their correlation, thus reducing the number of attitudes from the 21 questions administered to a manageable 6 independent attitude dimensions. This allows conclusions relevant to single independent attitudes as opposed to question-based conclusions, which may combine several attitude traits.

Participants

Beginning July 1, 2009, in staggered fashion by program, we invited EM residents and fellows from 6 university- and community-based academic EM training programs to participate in this study. We sent a survey to 287 eligible residents and fellows. The final survey was closed April 1, 2010.

Survey Instrument

We based this instrument on previous work by Lee et al, who validated a multidimensional analysis survey measuring geriatric attitudes of primary care residents and fellows.²² This instrument was adjusted from Lee's original 14 questions, to a 21-question survey with 7 additional EM-specific questions. These additional questions provide EM-specific insight clarifying EM resident attitudes toward training and didactics in the geriatric competencies for EM residents. In addition, these questions establish a first look at resident attitudes concerning the structure, systems and operations of EDs in the care of elder patients. Scoring was performed on a 5-point Likert scale with 1 being the least positive toward the elderly and 5 being the most positive toward the elderly. The numeric values of negatively worded questions were reversed so overall positive attitudes were consistently valued at the highest number of 5.

Data Analysis

We used factor analysis to abstract the principal dimensions of elderly attitude. From the correlated individual questions, principal components (a set of new linearly uncorrelated variables) were derived and then transformed by Varimax rotation so that the factor loading matrix has as simple a structure as possible. This results in any given question with high loading on a single factor but near zero loading on the remaining factors. Varimax rotation has been shown to be successful for this transformation.²³ We also calculated Cronbach alpha, an estimate of the internal consistency reliability based on the average correlation among items, for the attitudes analysis as a whole and the subscales measuring the 6 dimensions identified as a result of the factor analysis. Using a regression method, we derived factor scores for all the principal components for each participant. We compared mean factor scores using Student t, and scores among the different training levels were compared using ANOVA. Statistical significance was defined at 0.05. We performed all calculations using SPSS version 10.1 (SPSS, Inc. Chicago, Illinois).

RESULTS

Demographics

A total of 287 attitude surveys were sent, with 173 (60.3%) completed and returned. Among the 6 programs, the participation rate varied from 46.8% to 97.4%.

There was even distribution between post-graduate year (PGY) 1 (27.7%), PGY2 (26.6%), and PGY3 (30.1%) residents. There were 15.6% (27) PGY4 and PGY5 residents.

Table 1 shows the mean resident scores on the 21-survey questions. Residents demonstrated an overall mean score of 3.79, which suggests EM residents have an overall positive attitude toward older adults. For example question 10, pain medication prescribing, has a baseline score of 4.30, which suggests EM residents are aware of special pain needs in older adults. In question 4 we see EM residents in general do believe that it is society's responsibility to provide care for the elderly (score 4.05). In question 13 they demonstrate understanding of the slower pace of elders (score 4.09).

Factor Analysis

The loadings of the geriatric attitude questions in factor analysis are shown in Appendix 1. We identified 6 factors, accounting for 55.2% of the total variance of the sample. These factors were labeled "social value," "medical care," "residency training," "compassion," "geriatric education," and "resource distribution." Appendix 1 gives the individual loading coefficient used to calculate the contribution of that question to the total factor score.

The area of social value represented the greatest number of questions asked, resulting in high loading onto that factor, largest amount of variance explained by that factor, and the best internal reliability of the 6 factors (Cronbach). Social value was

Table 1. Mean scores on 21-question attitude survey of emergency medicine (EM) residents regarding treatment of geriatric patients.

Attitude question	Mean score
1. Most old people are pleasant to be with.	3.65
2. The federal government should reallocate money from Medicare to research on acquired immunodeficiency syndrome (AIDS) or pediatric disease.	3.72
3. If I have the choice, I would rather see younger patients than elderly ones.	2.75
4. It is society's responsibility to provide care for its elderly persons.	4.05
5. Medical care for old people uses up too much human and material resources.	3.00
6. As people grow older, they become less organized and more confused.	2.85
7. Elderly patients tend to be more appreciative of the medical care I provide than are younger patients.	3.32
8. Taking a medical history from elderly patients is frequently an ordeal.	2.38
9. I tend to pay more attention and have more sympathy towards my elderly patients than my younger patients.	3.04
10. Old people require special attention when prescribing pain medication.	4.30
11. Treatment of chronically ill old patients is hopeless.	3.72
12. Old persons don't contribute their fair share towards paying for their health care.	3.98
13. In general, old people act too slow for modern society.	4.09
14. Mild to moderate changes in mental status are not important in the emergency department and are better dealt with by inpatient services.	3.74
15. The current structure of emergency departments is well suited to care for our nation's elderly.	3.96
16. EM residents are well trained to care for elderly patients.	2.92
17. Sepsis guidelines will do little to improve care of elderly patients in the emergency department (ED).	3.80
18. Geriatric lectures will do little to improve the care elderly patients in the ED.	3.87
19. Systems and operations in the ED need to be adapted for the large influx of elderly patients.	3.82
20. My residency training has completely prepared me to care for the elderly ED patient.	3.10
21. I have little need for additional training in geriatric issues.	3.84
Total all 21 questions	3.79

Code: 1 = least positive attitude toward elderly 5 = most positive attitude

followed by medical care and residency training, as there were a larger number of questions attributable to these 3 factors. The overall internal validity of the factor analysis was 1.0, confirming that if this factor analysis to be repeated the results would be the same. The internal validity (Cronbach Alpha) of Lee's original 14 questions was .626, while with the addition of 9 new questions, the entire 21-question survey had Cronbach of .640, indicating no change with the addition of the new EM-specific questions.

Factor Scores

The factor scores in Table 2 demonstrate the baseline

attitudes of EM residents. The mean factor score is 3.79 with 3.0 representing a neutral position. Overall the residents had positive attitudes in each of the 6 dimensions at baseline. Residents had the least positive attitude regarding compassion in care of the elderly.

Comparison of the Factor Scores

The baseline factor scores of residents in various stages of training are compared in Table 3. When combining the 6 dimensions and analyzing overall attitude PGY1 residents trended ($p=0.063$) toward more positive outlook to care for

Table 2. Comparison of factor scores (derived using regression method and rescaled to mean of 3.79).

Factor	Mean
Social value	3.90
Medical care	3.83
Residency training	3.79
Compassion	3.69
Geriatric education	3.74
Resource distribution	3.77
Overall	3.79

the elderly patient, especially in attitudes regarding the social value of older adults.

DISCUSSION

Attitudes can be defined as a complex mental state involving beliefs, feelings, values, and dispositions to act in certain ways.²⁴ Attitudes can change as a function of experience, knowledge and social influences, which are behavioral, cognitive, and affective-based.²⁵ Medical educators are interested in attitudes because human action is influenced by attitude.²⁶⁻²⁸ Medical professionals responsible for the care of older adults understand resident and staff attitudes greatly affect both the quality of treatment of older people and the regard given them, and attitudes clearly affect the standard of care delivered.^{6,29-31} Attitudes toward older adults were associated positively as knowledge of this population increased.⁸ Knowledge of existing attitudes is therefore essential to determine if these attitudes will help achieve satisfactory ends or if attitudes should be altered in an attempt to enhance care.

Our study found the overall attitude of EM residents toward older adults was positive. This is in keeping with studies of internal medicine residents by Kishimoto,¹⁰ Lee,²² Helton,⁵ and Ahmed.³² Bragg surveyed family medicine program directors in 2001 and 2004; 32.1% reported residents' attitudes as a significant barrier to resident education in 2001. By 2004 these directors cited resident attitude as a barrier in just 3.6%.³³

Ahmed concluded that since most of the residents had fairly good attitudes toward older patients at baseline, they

were unable to show a significant change in attitude with their educational intervention.³²

Despite our encouraging findings, review of the EM literature still shows failings in EM management of older adults.³⁴⁻³⁸ Many practicing emergency physicians (EP) feel hesitancy when evaluating elders with complaints of weakness, dizziness, or "not feeling well." In 1992 McNamera found for each of 7 clinical presentations (abdominal pain, altered mental status, chest pain, dizziness/vertigo, fever without a source, headache, multisystem trauma), over 45% of practicing EPs have more difficulty in the management of older compared with younger patients.³⁹ Carpenter reexamined these areas in 2007. The majority of physicians noted all 7 presentations in older adults to use more time and resources than younger populations.⁴⁰ EPs in 2007 reported evaluation of older adults with altered mental status, chest pain and dizziness had in fact increased in level of difficulty compared with 1992 data. Understanding that the level of difficulty of a task adversely impacts attitudes toward that task, it seems the attitudes of practicing EPs would be more negative than our study suggests.

This study examines attitudes in programs with clear inter-program variations. Grouping residents from all programs by PGY year helps to control for program-specific variations to provide a clearer picture of attitudes independent of program-specific issues. Our study established deterioration in the attitudes of residents in subsequent PGY levels of training. We demonstrated that the PGY1 residents had the most positive attitude when caring for elderly patients, which raises concerns that residents may become less favorably disposed in caring for elderly patients as training progresses. Perceived behavioral control is the person's belief as to how easy or difficult performance of the behavior is likely to be. The more resources and opportunities individuals think they possess and the fewer obstacles or impediments they anticipate the greater is the perceived control.²⁷ Greater control leads to more positive attitudes. Residents and colleagues complain of the many medical, social, financial, and communication issues complicating the care of older adults. Is it possible that this experience repeated over time hardens the attitude of more senior emergency care providers? Is it

Table 3. Comparison of factor scores by training level.

Factor	PGY 1 n=48	PGY 2 n=46	PGY 3 n=52	PGY 4/Fellow n=27	p-value*
Social value	4.26	3.89	3.82	3.43	.006
Medical care	4.02	3.78	3.59	4.03	.112
Residency training	4.00	3.50	3.82	3.82	.142
Compassion	3.91	3.72	3.59	3.44	.242
Geriatric education	3.65	3.75	3.67	3.95	.564
Resource distribution	3.66	3.80	3.68	4.06	.373
Overall	3.92	3.75	3.70	3.79	.063

* One way ANOVA

PGY, post graduate year

possible that this increasing negative attitude would be seen in practicing EPs as suggested above?

Previous studies have shown that negative attitudes towards this segment of the population arise from fear and lack of the knowledge and skills needed to care for the elderly patient.⁴¹ EM residency programs showed that 40% of residency directors believed that training in geriatric EM was inadequate, and 53% of residency-trained practicing physicians reported that the amount of time spent on geriatric topics during their residency was insufficient.^{39,42} We know that EM resident education in geriatrics has only recently gained attention with programs slowly augmenting training in this area. Therefore, the more senior EPs likely have significantly less training in care of older adults. Again could less preparation and repeated negative experiences harden attitudes toward older adults? As the older adult population grows, we need to be aware of the negative experiences described above and ensure that programs reinforce positive geriatric care experiences to enhance resident attitudes in the care of this challenging and vulnerable population.

We agree with the many educators, clinicians, and patients who have called for an enhanced geriatric curriculum in EM residency training. Additionally, we believe the attitudes of EM residents toward this population should specifically be addressed. This will ensure optimal attitude of trainees as they advance through residency and overcome unconscious incompetence when caring for this population. Future work should focus on attitudes in concert with knowledge and skills to achieve improved care of older adults.

LIMITATIONS

All the residency programs in this study were based in the Midwest limiting generalizability. As with many survey instruments, poor rates of return could create a sample bias as only those residents with more positive attitudes may be motivated to complete them. This also impacts generalizability to the entire population of EM residents. Highly variable rates of return were noted by program. This introduces potential bias effects from different faculty or ED populations on different resident samples. Perhaps EDs that handle older adults particularly well or particularly poorly motivated completion of surveys.

EM residents could easily ascertain the survey sought response to older adult issues and positive responses could be the result of the Hawthorne effect. Use of factor analysis is a limitation since factor analysis is based on correlation alone. Therefore, causal inferences are not possible.

The 7 EM-specific sample questions number 14-21 had not been previously validated and could alter the factor analysis. However, the communality analysis in Table 2 shows how much each question has in common with the other 20 questions. It is evident that the new questions have as much in common with the old questions as the old questions had with each other. Therefore, the new questions fit in quite well with

the previously validated questions.

Finally, in comparison to the work by Lee, which measured attitudes of individuals over time, this work measures one point in time. Longitudinal inferences are drawn by comparison of different individuals grouped by PGY year. The validity of such conclusions assumes educational exposure and clinical experiences are reasonably similar in each program over time. This may fail to capture the evolution of attitudes in specific individuals.

CONCLUSION

EM residents demonstrate an overall positive attitude towards the care of older adults. We noted a longitudinal hardening of attitude in social values, which are more negative in successive PGY year levels.

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