

Anemia in the Elderly: Knowledge, Attitudes, and Perception of Primary Care Physicians

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ABSTRACT

Background: Anemia in the elderly can impair the quality of life as well as cognitive and physical functions and is even associated with an increased risk of death. Thus, in the elderly, anemia should not be considered as a consequence of aging and must be explored and appropriately treated by their primary care providers. There are no studies to assess the awareness of primary care physicians regarding anemia in the elderly. We designed a survey questionnaire to assess the knowledge, attitudes, and perception about anemia in elderly among primary care providers with the aim to design medical curriculum and academic teaching to maximize the current understanding of anemia in the elderly.

Materials and methods: A survey instrument, with 10 questions assessing the primary care physician's knowledge, attitudes, and perception, was prepared by two internal medicine (IM) residents and reviewed by a hematologist along with a primary care provider for appropriateness and reliability. The survey was then administered to the residents and primary care providers in the Departments of IM and Family Medicine (FM) at Memorial Hospital of Rhode Island.

Results: We obtained 69 surveys, out of which 55% of the responders were female and the median age was less than 30 years. There was equal representation of IM and FM doctors. On the knowledge component, 48% of the physician agreed that the hemoglobin threshold for the diagnosis of anemia was the same in young and elders, 52% agreed for routine anemia screening while 67% felt that it affects only morbidity but not mortality. Only 55% agreed that nursing home residents are at a higher risk of anemia than the elderly in the community and 23% did not think that anemia affects the physical performance in the elderly. There was no statistically significant difference based on the type of medical practice or the years of clinical experience for attitude and perception questions in the survey.

Conclusion: There are significant gaps in the knowledge and skills of primary care health providers which need to be addressed in the form of training sessions or periodic continuing medical education (CME) to ensure better management and care of the increasing elderly population.

Keywords: Anemia, Attitudes, Elderly, Hemoglobin, Knowledge, Survey.

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INTRODUCTION

Life expectancy in humans has gone up worldwide, leading to an increase in the elderly population. Older people (age >65 years) have different healthcare problems and needs. One of the common and often understudied medical problems in the elderly population is anemia. Systemic literature reviews estimated the prevalence of anemia up to 2.9–51% in elderly men and 3.3–41% in elderly women.¹ According to the National Health and Nutrition Examination Survey (NHANES) study in the USA, anemia of elderly (AIE) is of epidemic proportions with approximately 3 million seniors being anemic.² With the growing percentage of the aging population, these numbers could go up further. Given how prevalent this is in the community, the American Society of Hematology and National Institute of Aging had an expert panel to address this public health issue and came up with some key questions to further help understand and address this issue.²

Blood hemoglobin levels tend to decline with aging³ gradually; however, currently, there is no separate definition and cutoff value of hemoglobin for anemia in elderly population, and we still use the conventional WHO definition for anemia, i.e., <13 g Hb/dL for men and <12 g Hb/dL for women.⁴ In clinical practice, it is easy for us doctors to assume that slightly lower levels of hemoglobin in older people have no clinical significance³ and consider it a normal variance. This could prove detrimental to further workup and treatment as numerous studies have shown that anemia in the elderly has a significant impact on morbidity and mortality.^{3,5} Low hemoglobin levels have shown to increase the risk of falls, decrease

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physical mobility, increase weakness, worsen cognitive functions, increase depression, and reduce the quality of life.^{3,5–7} Thus, treating anemia has been shown to be beneficial as this population, which already has many other comorbid conditions, showed improved quality of life.

It is imperative for us as physicians to understand the significance of anemia in the elderly if we aim for a healthier aging population. So, then the next question is why we as physicians are unable to identify these populations early in the disease course and make appropriate interventions? Do we as primary care physicians understand this disease entity, know how to screen, how to work up these patients, and how to treat them adequately and when to refer to a specialist? No studies are done to understand the perception

and knowledge of primary care physicians about anemia in the elderly. It is essential for us to understand the knowledge gaps so that we can take necessary steps to increase awareness among primary healthcare professionals.

Hence, we decided to undertake this study to evaluate the knowledge and perception of primary care physicians about anemia in the elderly at our institute.

MATERIALS AND METHODS

The study was conducted at Memorial Hospital of Rhode Island after institutional review board committee approval. The primary aim was to develop a validated survey tool for anemia in the elderly, based on our hypothesis that there is not enough awareness among primary care providers about anemia in the elderly. Our secondary aim was to identify the knowledge gaps, so that necessary teaching interventions can be undertaken in the future.

Two internal medicine (IM) residents prepared a survey instrument with 10 questions (Table 1A) assessing the primary care physician’s knowledge, attitude, and perception about anemia in the elderly and reviewed by a hematologist and a primary care provider for appropriateness and reliability. The survey consists of four demographic questions and 10 questions assessing the knowledge, attitude, and perception of the physicians. Questions 1, 4, 7, 8, and 9 assessed the knowledge while 2, 3, 5, 6, and 10 assessed attitude and perception (Table 1B). A 7-point Likert scale was used for measurement of the items. Resident doctors and attendees working in the family medicine (FM) and IM departments at Memorial Hospital of Rhode Island were approached for the study. The providers were approached in their clinics. A two-page questionnaire with 10 questions about knowledge, attitude, and perception was given to each participant. The study was conducted over a period of 6 months. For analysis, scores of 1–3 were categorized as “agree,” 5–7 as “disagree,” and 4 as “neutral” for each question. Percentages were calculated and variability was assessed by Fisher’s test.

RESULTS

A total of 90 surveys were distributed among doctors in the IM and FM departments. We were able to obtain 69 completed surveys, with a survey response rate of 76.6%. Out of the 69 survey responders, 38 (55%) were females, 57 (82%) were between 20 and 39 years of age, and 35 (50%) were from the IM department. Fourteen (20%)

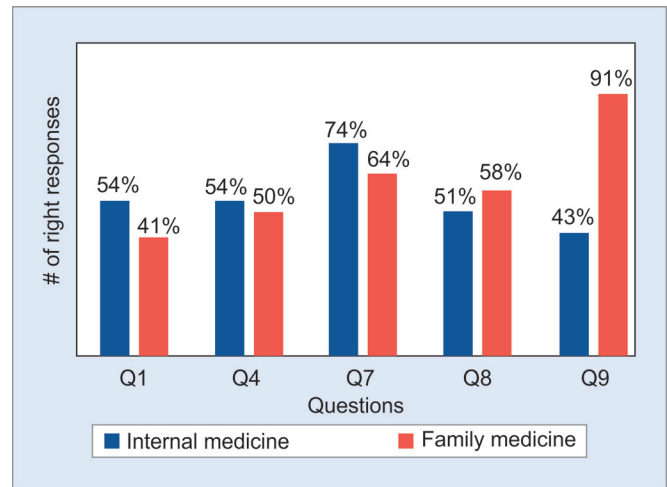


Fig. 1: Knowledge scores according to departments

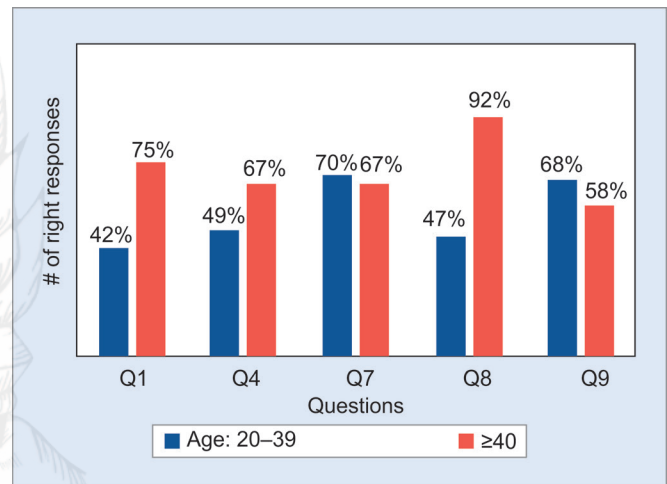


Fig. 2: Knowledge scores according to age groups

Table 1A: Survey questions

1	The hemoglobin threshold for the diagnosis of anemia is the same for the elders and the young.
2	A hematology referral is useful for most cases.
3	I feel confident evaluating anemia in the elderly.
4	All patients over 70 years of age should be routinely screened for anemia.
5	I am confident in treating anemia in my elderly patients.
6	I feel confident teaching my patients about the risks of anemia.
7	Anemia in the elderly is more associated with decreased physical performance than anemia in young patients.
8	Elders in the nursing homes are at a higher risk of anemia than elders in the community.
9	Anemia in the elderly affects morbidity but not mortality.
10	I know when to refer my patients to a hematologist.

were teaching faculty, 22 (32%) were postgraduate year-1 (PGY-1), 19 (28%) were PGY-2, and 14 (20%) were PGY-3 (Table 2).

After evaluation of the survey responses for knowledge about anemia of elderly (AIE), we noted 33 (48%) as agreed that the hemoglobin threshold for the diagnosis of anemia is the same for the elders and the young, while 36 (52%) agreed to routine screening of adults >70 years of age for anemia. Forty-eight (70%) responders were associated with a more significant decrease in physical performance with AIE, 38 (55%) concurred that elders in the nursing homes are at a higher risk of anemia than elders in the community, and 46 (67%) felt that AIE affects not only morbidity but also mortality. Overall, FM providers scored more on the knowledge questions than IM providers with knowledge scores of 60.8 and 55.2, respectively (Fig. 1). Younger clinicians scored higher on the knowledge questionnaire than clinicians ≥40 years (Fig. 2).

After evaluation of the survey responses for attitudes and perception about AIE, we noted that 52 (75%) knew when to refer to hematology, but only 13 (18%) thought that all AIE cases need hematology referral. Fifty-eight (84%) providers were confident in diagnosing anemia and 56 (81%) knew to treat it effectively. Fifty-five (80%) were confident in educating patients about the risks of anemia. Overall, IM providers were more confident in the



Table 1B: Survey questionnaire

General demographic information:								
1. Profession:	IM: []	FM: []						
2. Type:	PGY-1: []	PGY-2 []	PGY-3 []	Attendee: []				
3. Sex:	M: []	F: []						
4. Age in years:	20–29: []	30–39: []	40–49: []	50–59: []	>60: []			
Questions:								
1. The hemoglobin threshold for the diagnosis of anemia is the same for the elders and the young								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
2. A hematology referral is useful for most cases								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
3. I feel confident evaluating anemia in the elderly								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
4. All patients over 70 years of age should be routinely screened for anemia								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
5. I am confident in treating anemia in my elderly patients								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
6. I feel confident teaching my patients about the risks of anemia								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
7. Anemia in the elderly is more associated with decreased physical performance than anemia in young patients								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
8. Elders in the nursing homes are at a higher risk of anemia than elders in the community								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
9. Anemia in the elderly affects morbidity but not mortality								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly
10. I know when to refer my patients to a hematologist								
Disagree Strongly	1	2	3	4	5	6	7	Agree Strongly

diagnosis and management of AIE than their FM counterparts (Fig. 3), but this was not statistically significant. Clinicians ≥ 40 years of age were surer and more confident in the diagnosis and treatment of AIE than younger clinicians, but this also was not statistically significant (Fig. 4). There was a statistically significant ($p < 0.5$) difference in the knowledge between first-year postgraduate doctors vs second- and third-year postgraduate students, but no difference in their attitudes and perception about AIE.

DISCUSSION

Anemia in the elderly is a significant healthcare problem with a prevalence in the community of 9.2–23.9% in elderly men and 8.1–24.7% in elderly women based on studies by Zakai et al.,⁸ Guralnik et al.,¹ and Salive et al.⁹ Studies have also shown that the prevalence of AIE rises with increasing age and the prevalence in the

age group of 75–85 years is around 4.9–15.0% for men and 7.1–12.7% for women while for ages above 85 years is 29.6–30.7% for men and 16.5–17.7% for women, respectively.^{9,10} Racial differences have been observed with higher prevalence in Hispanics and African-American populations compared to Caucasian whites.^{1,11}

The most common causes of anemia in this population are chronic kidney disease, chronic inflammation, and nutritional deficiencies.¹² Retrospective studies like that of Artz et al.¹² have shown the prevalence to be higher in nursing home residents (48%). In our study, we noted that only 55% of the clinicians acknowledged that the occurrence of AIE was lower in the community vs nursing homes.

The hemoglobin threshold for anemia is the same for elderly and young adults as per the WHO definition. Majority of the patients have mild anemia, and only 3% have hemoglobin level < 11 g/dL.¹³ As per the NHANES study, the top three causes of anemia in elderly are nutritional deficiency/blood loss (34%), unexplained anemia

Table 2: Demographics

Baseline characteristics	Total N (%)
Survey response rate N (%)	69 (76.6)
Age (in years) N (%)	
20–39	57 (82)
≥40	12 (18)
Gender N (%)	
Female	38 (55)
Male	31 (45)
Department	
Internal medicine N (%)	35 (50)
Family medicine N (%)	34 (49)
Level of training	
PGY-1*	22 (32)
PGY-2	19 (28)
PGY-3	14 (20)
Faculty	14 (20)

*PGY: postgraduate year

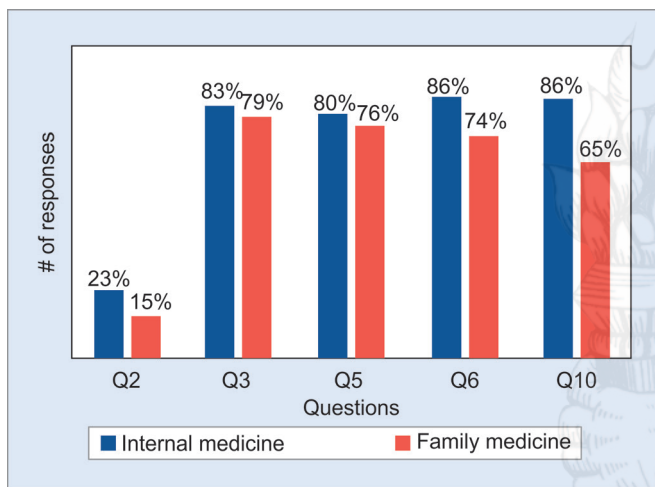


Fig. 3: Attitude and perception scores according to departments

(34%), and anemia due to chronic illness/inflammation or chronic renal failure (32%).¹ We noted in our study that only 48% of the providers were aware of the hemoglobin threshold for AIE and 48% felt that routine screening was necessary while 84% clinicians were confident about screening for AIE.

Several studies have shown that AIE leads to not only the overall decline in performance status but also worsening the preexisting conditions like cardiovascular disease, neurological conditions, increased fracture risk, depression, and cognitive function.^{3,5–7,14–16} Studies like that of den Elzen et al.¹⁶ have shown reduced functional capacity, mobility, increased fragility and falls, and decreased muscle mass and strength.^{5–7} Lucca et al.³ and Denny et al.¹⁷ both have shown a decline in cognitive abilities with anemia while an Italian study by Onder et al.¹⁸ showed the association between anemia and worsening depression. Hayashi et al.¹⁴ showed that correcting anemia in elderly with chronic renal disease using erythropoietin improves left ventricular function. Thus, AIE is associated with increased hospitalizations and morbidity.^{13,19} Many large cohort studies have shown anemia to increase the risk of mortality after controlling for other comorbid

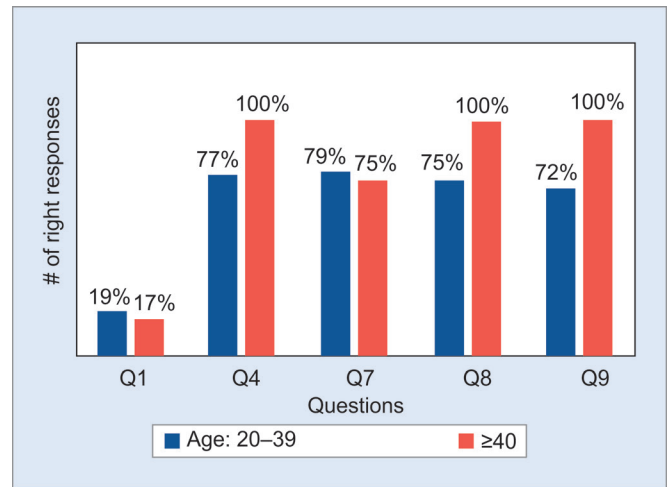


Fig. 4: Attitude and perception scores according to age groups

conditions.^{20,21} AIE affects not only morbidity but also mortality, but in our survey, only 67% of doctors acknowledged that AIE affects both mortality and morbidity. Though the doctors scored low on the knowledge score, 80% of doctors were confident in treating it and educating their patients about its risks and effects on health.

AIE causes a significant increase in healthcare needs and contributes directly and indirectly to increased medical cost.^{22–24} With an ever-increasing older population, the prevalence and burden of AIE will keep rising. This will have a substantial economic impact with an increase in healthcare costs and an increase in the use of limited medical resources. Thus, it is imperative for us physicians to correctly identify this population and treat them appropriately. In 2004, the American Society of Hematology and National Institute of Aging convened a panel of 20 experts to address this public health problem, and they came up with some key concepts and questions like what should be the hemoglobin threshold? Should everyone be screened, and who should diagnose and treat these patients to help further understand and address this issue?² They also came up with a practical approach to clinically evaluate AIE.² In our study, 52% clinicians agreed to routine screening, while only 13% felt that these patients need a hematology specialist, and 75% know when to refer to hematology.

In our survey, we found that the knowledge score was 50–60% for all the physicians; thus, there is a knowledge gap among providers. We further found that FM providers were more knowledgeable than their IM counterparts, but IM doctors were more confident in treating and diagnosing AIE. We also noted that though there was a statistically significant difference in the knowledge levels among junior and senior residents, they did not differ in their attitude and perception about AIE. Clinicians above >40 years were more confident in the treatment and diagnosis of AIE, and this could be because the majority of the clinicians <40 years of age were resident doctors in training. The knowledge gap could be due to the lack of educational training during medical school and residency, lack of awareness among primary care providers, and the absence of screening and treatment guidelines. The dearth of large prospective clinical studies on the epidemiology, morbidity, and mortality impacts of AIE also contributes to this knowledge gap.

The limitations of our study are that it was conducted at a single institute and did not include clinicians in private practice. We also

had many trainee doctors vs practicing doctors. However, we were able to create a survey tool to assess the awareness about AIE among primary care providers and test it in a small cohort for validation. The survey tool generated interesting results underscoring the fact that there is a lack of knowledge and awareness about AIE. The next step would be to test this questionnaire in a large cohort and also to conduct educational workshop for providers on AIE.

CONCLUSION

Although most primary care physicians feel confident in managing and treating anemia, this does not correlate with their low knowledge scores. Only 55% think that the threshold for making the diagnosis of anemia is the same in young and adults and only 67% are aware of its impact on mortality and morbidity. Our results reflect the need to revisit the training curriculum to fill out gaps that primary care providers have when facing elderly patients with anemia.

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