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Almost one-third elderly persons affected with anaemia – A cross-sectional community based study from rural India

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Abstract

Introduction: A rise in elderly population is noted in India not just in absolute numbers buts also in proportion. Anaemia in elderly is associated with increased morbidity and mortality and aggravating the comorbidities. Lack of quality information in community-based elderly exists, hence, our study aimed to estimate the prevalence of anaemia among community-dwelling elderly persons and qualify the same morphologically.

Methodology: Rural community-based, cross-sectional study among elderly person's 60 years was conducted in December 2016 and May 2017 in Haryana, India. A sample size of 396 was calculated and participants were selected randomly from the health and demographic surveillance system. The pre-tested self-developed semi-structured questionnaire was administered and a capillary blood specimen was used to estimate hemoglobin using HemoCue method. WHO cutoff's for anaemia was used and morphology of anaemia was ascertained by examination of

peripheral blood smears.

Results: Prevalence of anaemia among community-dwelling elderly persons was 28.3(95% C.I. 24-32.9). Anaemia was more prevalent in elderly males (28.6, 95% CI 22.8- 35.1) than in elderly females (27.9, 95% CI 22.1-34.6). Prevalence increased with each passing decade (24.4, 31.1, and 37.2). Normocytic anaemia was most commonly found the type of anaemia morphologically (49.5%).

Conclusions: Prevalence of anaemia among community-dwelling elderly is high and is of public health concern. Routine screening for anaemia as part of geriatric health care services should be incorporated.

INTRODUCTION

Anemia is a common morbidity in elderly persons (aged 60 years or above). Anemia can have more severe complications in elderly persons than in younger adults and can greatly hamper their quality of life. Appropriate early identification and treatment can help prevent such adverse outcomes. Anemia in elderly persons is often overlooked as symptoms of anemia, for example, weakness, fatigue, and shortness of breath are thought to be due to aging leading to its misdiagnosis. Therefore, early detection of anemia in elderly is necessary to prevent delay in diagnosis of potentially treatable conditions. Anemia, though fairly prevalent in elderly persons, is often missed, especially in routine clinical examinations.In India, the absolute number of elderly person is high. Between 1961 and 2011, the absolute number of elderly persons increased more than 4 fold from 24.7 million to 103.8 million. In terms of proportion, it increased from 5.6% in 1961 to 8.6% in 2011. Identification of anemia, and subsequent simple interventions even at primary care level, can reduce the adverse effects of anemia among elderly persons.

Study design

This was a cross-sectional survey conducted among elderly persons aged 60 years and above living in OAHs of the National Capital Territory (NCT) of Delhi, India. Data were collected from May 2015 to October 2015.

Study area/setting

For the purpose of this study, we divided the NCT of Delhi into five zones. We collected preliminary information about the OAHs on selected parameters including their location, type, and border strength. This information was collected by either contacting the OAH telephonically or making visits to the center if required. This information gave us data for creation of the sampling frame.

Sample size and sampling technique

Using the prevalence of anemia among elderly as 30% in their community-based study, with a relative precision of 20%, applying a design effect of 1.5, the minimum sample size required was 336, which with a nonresponse rate of 5% was increased to 354. We considered the design effect because the elderly persons staying in the same OAH would have a greater likelihood to be somewhat similar to one another. Since no prior information is available on the design effect among OAH settings, we considered 1.5 as a conservative measure.

Study tools and technique

A self-developed, semistructured interview schedule was used to record the sociodemographic profile and availability of medical care services. Hemoglobin (Hb) estimation was done using HemoCue Hb 201+ system (HemoCue AB, Kuvettgatan, Sweden). We defined anemia according to the World Health Organization, cutoff for Hb among elderly persons, i.e., a Hb level of <13 g/dL in men, and 12 g/dL in women at the sea level.[6],[7] The interview and measurement of Hb level were done by a single investigator.

Statistical analysis

We report an overall prevalence of anemia of 68.7%, among elderly persons staying in OAHs in Delhi, India with the prevalence being a

little higher among women (70.9%), compared to men (65.1%). We used the following MeSH terms in different combinations. However, we could not find any study on prevalence of anemia in OAH setting. Therefore, we refer to community-based studies to further compare the perspective of our study findings.

Anemia in aged is mainly caused by a gradual decrease in erythropoietin production by the kidneys; nonetheless, the decrease in Hb levels and consequent anemia in this age group should not be presumed to be a part of normal aging and should be adequately investigated and managed. This is important because studies have shown that in approximately 50% of elderly persons who had anemia, the reason is either iron deficiency,cobalamin deficiency, or chronic renal insufficiency. We recommend that future studies should address the causes of anemia.

Although the mean Hb was significantly different between men and women, sex did not have any influence on the prevalence of anemia in elderly persons staying in OAHs. Increase in age was a significantly strong predictor of anemia among this population. With aging, the red blood cell production is compromised due to reduced ratio of bone marrow to fat cells and reduced marrow response when stimulated with erythropoietin.Thus, age itself could cause anemia. We tried to overcome the deficiencies identified in previously published literature. Our study was primarily designed for elderly persons and had the required sample size; Hemocue was used for measurement of Hb level in our study, which is considered to be valid and reliable tool for estimation of Hb in field-based studies. The reported sensitivity of Hemocue method is 0.75 and specificity is 1.0 when cyanmethemoglobin method is used as gold standard.We therefore feel that our findings are valid.

We measured the prevalence of anemia among elderly persons living in OAHs in Delhi. The nonresponse rate was <2%. The Hemocue used for estimating the Hb was calibrated, as part of annual calibration of hospital instruments, but not specifically for this study.