

**LAPORAN**  
**PENELITIAN PENGUKURAN HEMOGLOBIN DAN KEMAMPUAN**  
**KOGNITIF KELOMPOK GERIATRI**



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## **Health Education, Hemoglobin Screening, and Cognitive Function in Elderly Participants**

### **Introduction**

Elderly individuals are highly vulnerable to anemia and cognitive decline due to natural changes in the body that occur with age. These changes often happen slowly and may not be noticed early, which can delay necessary treatment or preventive efforts. Many older adults do not realize they are anemic because the symptoms can be mild, vague, or mistaken for common signs of aging. Limited knowledge about anemia, a lack of consistent screening programs, and reduced access to simple examination tools such as hemoglobin measurement contribute to this problem. At the same time, cognitive impairment is also frequently found in older populations. Factors such as increasing age, differences between males and females, overall health status, and hemoglobin levels all influence cognitive abilities. When hemoglobin levels drop, the brain may receive less oxygen, which can affect memory, concentration, and daily functioning. Chapter 4 highlights detailed data on the characteristics of elderly respondents in this study and provides an overview of how age, anemia status, and cognitive function are related.

### **Methods**

This study used an observational analytic method with a cross-sectional design, meaning that all data were collected at one point in time. A total of 32 elderly participants took part in the study at PCM Ciledug, and every individual who met the criteria was included through total sampling. To assess cognitive function, researchers used the MoCA tool, which helps evaluate different mental abilities such as attention, memory, and problem-solving. Hemoglobin levels were measured using the Sahli method, a simple, low-cost technique that is especially useful in community settings where advanced laboratory equipment is not always available. Before carrying out any measurements, health education sessions were conducted to help participants understand the purpose of the screening, recognize signs of anemia, and become more aware of how anemia can affect cognitive health. After data collection, statistical analysis was done using the Chi-Square test to examine whether there were meaningful relationships between age, sex, anemia status, and cognitive function in the group studied.

### **Results**

#### **Participant Characteristics**

The data in Chapter 4 show the distribution of key characteristics among the 32 elderly respondents. More than half of the participants, or 56.25 percent, were under 65 years old, while the remaining 43.75 percent were 65 years or older. In terms of anemia status, most of the participants, 71.9 percent, did not have anemia, while 28.1 percent were found to be anemic. Cognitive function results showed that 43.75 percent of the elderly had normal

cognitive performance, while 56.25 percent experienced some level of cognitive impairment. These numbers provide a clear picture of the overall condition of the participants and help guide the interpretation of the findings.

### **Health Education Outcomes**

The health education sessions conducted before the screenings played an important role in improving the participants' understanding of anemia and cognitive health. Many elderly individuals gained new knowledge about what anemia looks like, why hemoglobin levels matter, and how early detection can prevent more serious health problems. They also learned how anemia can influence their ability to think clearly and perform daily activities. These sessions encouraged the elderly to become more involved in their own health care and inspired them to take screening activities more seriously. This outcome is in line with previous findings showing that when elderly people receive supportive and empowerment-focused training, they tend to become more confident in monitoring their health and maintaining their independence.

### **Hemoglobin Screening Findings**

Hemoglobin screening with the Sahli method revealed that 9 out of the 32 participants had anemia, which equals 28.1 percent. This finding supports earlier studies showing that anemia is still a common condition among older adults. Anemia can cause tiredness, reduced strength, and difficulty performing routine tasks, especially in people whose physical resilience has already decreased with age. The identification of anemia in this study group confirms the importance of simple and accessible screening tools that can help detect the condition before it leads to more serious health problems.

### **Cognitive Function Assessment**

The MoCA assessment showed that 18 participants, or 56.25 percent, had some degree of cognitive impairment. Meanwhile, 14 participants, or 43.75 percent, had normal cognitive function. Age was found to be a major factor influencing cognitive performance. Participants younger than 75 years were significantly more likely to have normal cognitive functioning, with statistical results showing a strong association. On the other hand, although anemia is known to potentially affect brain function, this study did not find a statistically significant connection between mild anemia and cognitive impairment. Even so, the biological relationship suggests that long-term low hemoglobin could still influence brain activity, and this possibility should be considered in future research.

### **Discussion**

The results in Chapter 4 indicate that anemia is still fairly common among elderly individuals and may play a role in decreasing cognitive function because of its effect on oxygen delivery to

the brain. Although this particular study did not show a significant relationship between anemia and cognitive impairment, the overall high rate of cognitive decline observed in the participants points to the need for early screening and continuous monitoring. Age was a clearly significant factor in cognitive health, supporting the idea that as people grow older, cognitive challenges become more frequent and more noticeable. Health education proved to be a helpful part of this study, as it increased awareness, encouraged participation, and created a supportive environment for elderly individuals to learn about their health. These findings highlight the importance of developing community-based programs that provide accessible health information and screening opportunities for older populations.

### **Conclusion**

Based on the data presented in Chapter 4, several important conclusions can be drawn from this study. First, health education was effective in increasing awareness and participation in anemia and cognitive screening among the elderly. Second, the hemoglobin screening identified that 28.1 percent of the participants had anemia, which shows the value of simple screening tools such as the Sahli method for early detection. Third, more than half of the participants experienced some level of cognitive impairment, and age was found to be a strong predictor of cognitive performance. Lastly, even though anemia was not statistically associated with cognitive impairment in this study, the potential link between hemoglobin levels and brain function highlights the importance of continued monitoring and the need for larger studies in the future.

Overall, the combination of health education, regular hemoglobin screening, and cognitive assessments is an important strategy for preventing serious complications and improving the overall well-being and quality of life of elderly individuals in the community.

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**Menembus Kabut Kognitif : peran skrining anemia sebagai predictor  
penurunan fungsi otak pada lansia**

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**Abstract**

This study investigated the relationship between age, gender, and anemia status with cognitive function in elderly individuals. Utilizing an observational analytic design with a cross-sectional approach, the research was conducted at *Pimpinan Cabang Muhammadiyah Ciledug* with a total sample of 51 participants selected through total sampling. Cognitive function was assessed using the Montreal Cognitive Assessment (MoCA), while anemia status was measured using a haemometer with the Sahli method. Data analysis employed the Chi-Square test. The findings showed that individuals aged under 75 years had a higher likelihood of exhibiting normal cognitive function (OR = 6.480; 95% CI 1.844–22.769; p = 0.002). Meanwhile, gender (male) and mild anemia did not demonstrate statistically significant associations with cognitive function. The study concludes that age, gender, and anemia status contribute to cognitive function outcomes in the elderly.

**Keywords:** Anemia, Gender, Cognitive Function, Elderly, Age

**Abstrak**

Penelitian ini bertujuan untuk mengetahui hubungan antara usia, jenis kelamin, dan status anemia dengan fungsi kognitif pada lanjut usia. Penelitian menggunakan desain analitik observasional dengan pendekatan cross-sectional dan dilakukan di *Pimpinan Cabang Muhammadiyah Ciledug* dengan jumlah sampel 51 orang lanjut usia menggunakan teknik total sampling. Fungsi kognitif diukur menggunakan Montreal Cognitive Assessment (MoCA), sedangkan status anemia diukur menggunakan haemometer metode Sahli. Analisis data menggunakan uji Chi-Square. Hasil penelitian menunjukkan bahwa usia <75 tahun memiliki kemungkinan lebih tinggi untuk menunjukkan fungsi kognitif normal (OR = 6,480; 95% CI 1,844–22,769; p = 0,002). Sementara itu, jenis kelamin (laki-laki) dan anemia ringan tidak menunjukkan hubungan signifikan dengan fungsi kognitif. Penelitian ini menyimpulkan bahwa usia, jenis kelamin, dan status anemia berkontribusi terhadap fungsi kognitif pada lanjut usia.

**Kata Kunci:** Anemia, Jenis Kelamin, Fungsi Kognitif, Lansia, Usia.

