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Strengthening Santri Husada Cadres as Peer Educators in Anemia Prevention in Pondok Pesantren Setting

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A B S T R A C T

Like many other Islamic boarding schools (pondok pesantren), this institution provides dormitory facilities and meals for its students, yet animal-based protein is served only once a week. A community health screening conducted in 2024 revealed that 41% of participating students were suspected of having anemia. In response, we implemented a community service program to improve adolescent health by empowering kader santri husada (student health cadres) as peer educators for anemia prevention. This community development program involved education on anemia and educational media, the development of educational media, and peer-led education sessions. A total of 72.7% of cadres completed the training, producing two educational media outputs. Female cadres subsequently conducted anemia and iron supplementation (TTD) education for 60 female students, followed by a collective TTD consumption activity. This initiative shows that student health cadres can act as agents of change in pondok pesantren. Future programs should incorporate pre- and post-tests during peer education sessions and establish routine activities to reduce anemia prevalence among students.

INTRODUCTION

Anemia is a health condition characterized by hemoglobin (red blood cell) deficiency, leading to fatigue, weakness, and lethargy, which in turn negatively affects creativity and productivity. Early screening and prevention of anemia are highly beneficial, as they enhance immunity in adulthood and help prevent low birth weight (LBW), stunting, and infant mortality.

Young people play a crucial role in sustaining national development. Thus, improving adolescent health represents a strategic investment for the future of every nation, including Indonesia. According to the 2018 Riset Kesehatan Dasar, the estimated prevalence of anemia among children (5–14 years) and young adults (15–24 years) was 26.8% and 32%, respectively. These figures decreased in the 2023 Indonesian Health Survey to 16.3% and 15.5% (Ministry of Health, 2024). However, anemia prevalence within Islamic boarding school (Pondok Pesantren) clusters remains higher than the national average. A study by Nugraha, G., et al. (2024) reported anemia prevalence among santri (Islamic boarding school students) at 31.2%. This fact highlighting the urgent need for anemia control in pondok pesantren setting.

The growing number of pondok pesantren has made this institution widely recognized among both

Muslim and non-Muslim communities in Indonesia. Pondok pesantren are Islamic educational institutions where students live and study under the guidance of teachers, commonly known as kiai, while residing in dormitories. Although supervised by the Indonesian Ministry of Religious Affairs, each pondok pesantren maintains its own culture and management system. To promote health awareness, each pondok pesantren is encouraged to establish a Poskestren (Pesantren Health Post). According to Ministry of Health Regulation No. 1 of 2013 on Poskestren implementation, one mandatory resource is the presence of santri husada cadres, comprising at least 3% of the total student population. These cadres serve as community motivators, activity initiators, role models, and health promoters within pondok pesantren.

Pondok Pesantren X, located in East Java Province, is one of the partner institutions of the Bachelor of Public Health program at Universitas Nahdlatul Ulama Surabaya (UNUSA). Interviews with the pesantren caretakers revealed that the school accommodates 700 students, of whom 380 are residents. The Poskestren is staffed by one midwife and supported by 22 santri husada cadres. Several health problems were identified in 2025, with anemia ranking among the top ten priorities. In our community service activities conducted the previous year at the same pesantren, hemoglobin screening using the Point of Care Testing method indicated that 41% of students were suspected of having anemia.

Santri at Pondok Pesantren X are provided with two meals daily—at 5 a.m. and after ashar prayer. The menu largely consists of rice accompanied by plant-based protein and vegetables, while animal-based protein, such as chicken soup (soto ayam), is typically served only once a week. Some santri reported that vegetables often ran out, leaving only broth, due to group-based meal serving practices without consideration for balanced and safe nutritional value. The long interval between meals also leaves santri in need of additional food intake. While the on-pondok canteen offers fried snacks, instant noodles, and packaged beverages, the off-pondok canteens mainly provide carbohydrate-rich, protein-poor foods such as seblak and pentol. These dietary patterns, coupled with irregular meal distribution, contribute to the high prevalence of suspected anemia among santri, underscoring the need for urgent interventions.

Given these challenges and opportunities, we aim to empower santri husada cadres as the closest and strongest agents of change within pondok pesantren. Through peer education, these cadres are expected to enhance santri's knowledge of anemia symptoms and prevention strategies, thereby reducing anemia prevalence in the pondok pesantren. This community service activity also supports three of the university's Key Performance Indicators (IKU): (2) students gaining off-campus experience, (3) lecturers engaging in off-campus activities, and (5) community utilization of lecturers' work.

METHOD

Based on the aforementioned background, we conducted a community engagement program at Pondok Pesantren X consisting of three main activities, implemented from May to August 2025. The first activity

involved refresher education on anemia and its prevention, as well as the development of health promotion media. The second activity was the creation of anemia educational media by santri husada cadres. The final activity included peer-led education sessions on anemia prevention delivered by the cadres to other students, followed by a collective iron supplementation (TTD) session with female students. This program adopted a Community-Based Participatory Approach (CBPA) by involving santri husada cadres from the beginning to ensure their capacity to educate fellow students.

The first activity—refresher education on anemia, its prevention, and health promotion media—was aimed at santri husada cadres. It was termed “refresher” because some cadres had previously received anemia-related training during our prior community service activities. This session began with a 10-item true/false quiz on anemia knowledge, followed by an education on anemia, prevention strategies, and health promotion media development. The session concluded with group discussions among male and female cadres to design educational media that could help reduce anemia prevalence at Pondok Pesantren X.

The second activity was the creation of anemia educational media by each cadre team. We provided logbooks to monitor the development process. The cadres designed and produced the media from initial concept to final product, utilizing tools, materials, and facilities available at the pesantren. The goal was to produce at least one educational media product (e.g., posters, leaflets, short videos, or other interactive materials) entirely designed and created by the santri husada cadres. These materials will serve as educational aids for promotive and preventive efforts to address anemia among students.

To ensure program sustainability, trained cadres were then tasked with directly educating their peers—this formed the third activity. Through this cascading education process, the program aimed to extend its impact beyond the training phase. This final activity concluded with a collective iron supplementation (TTD) session involving female students. A detailed summary of target indicators for each stage of the community service program is presented in the table below.

Tabel 1. Community Development Targeted Indicator

No	Program	Indicator
1	Refresher education on anemia, its prevention, and health promotion media	a. 50% (11) of the santri husada cadres attended and participated in this educational activity. b. The average quiz score of returning cadres was higher than that of new cadres.
2	Creating anemia educational media	a. The santri husada cadres produced one educational media product on anemia and its prevention.
3	Educating peers and iron supplementation (TTD)	a. The santri husada cadres delivered educational sessions on anemia and its prevention attended by at least 20 students from either MTS (junior high level) or MA (senior high level). b. 100% of the female students attending the education session consumed the provided iron supplements (TTD).

RESULT AND DISCUSSION

Refresher education on anemia, its prevention, and health promotion media

A total of 16 out of 22 cadres (72.75%) participated in the refresher session delivered in the first activity. Since not all cadres were new—and considering that anemia education had already been provided in the previous year—the program began with a quiz for the cadres. The results showed that the average score of returning cadres (88.75) was higher than that of new cadres (85.00). This indicates that the knowledge of santri husada regarding anemia was generally good in both groups, and it is reasonable that returning cadres scored higher, as they had already received similar education in the past year. Both groups consisted of eight participants each. Following the quiz, a 60-minute interactive session was conducted, covering refresher materials on anemia and its prevention, followed by health promotion media. The materials were delivered using an interactive approach, complemented by real-life examples and explanations on the importance of health promotion media in effectively conveying messages to fellow students. The good quiz results, coupled with refresher training, served as an essential foundation for cadres to educate their peers, namely other students. As agents of change in the pesantren, cadres are expected to possess strong knowledge to help shape attitudes and behaviors.

After the education session, participants were divided into two groups based on gender to engage in a brainstorming session on educational media ideas. The discussions were active and enthusiastic, with each group presenting ideas in turn, debating, and evaluating the most relevant concepts to be applied in the pesantren environment. Both the male and female groups ultimately agreed to develop audiovisual media as the primary educational tool, as it was considered easier to understand, more engaging, and aligned with students' increasing familiarity with visual media.

Development of Anemia Educational Media

Following the presentation, a brainstorming discussion was conducted within the male and female cadre groups to design an educational media plan on anemia. Both teams decided to develop audiovisual media in the form of a video, as it was considered more effective and engaging for the santri audience. The following provides an overview of the video produced by the cadres:



Figure 1. Educational Media Screenshot by Male Santri Husada Cadres

Source: Community Engagement



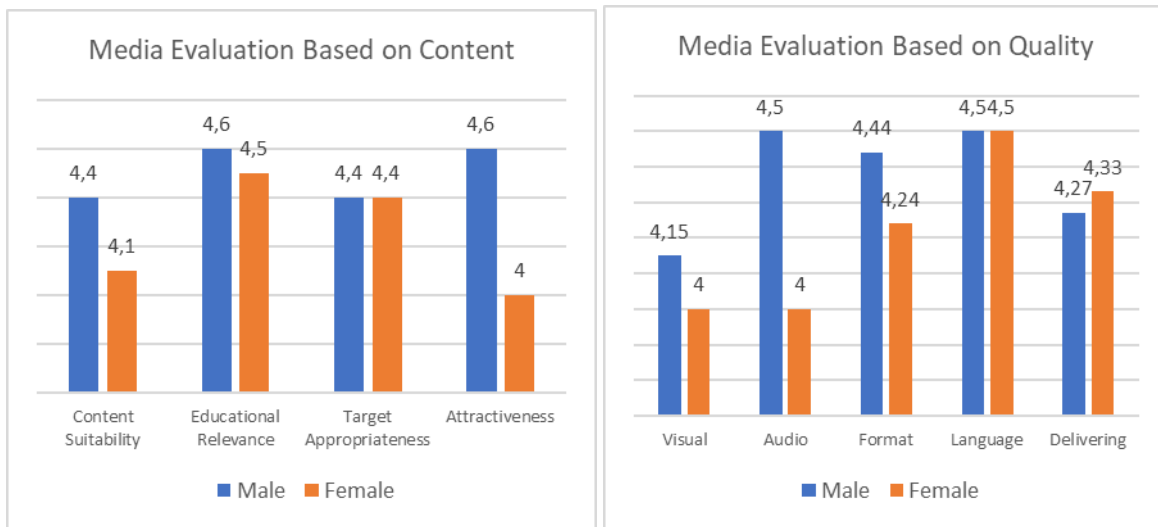
Figure 2. Educational Media Screenshot by Female Santri Husada Cadres
Source: Pengabdian Masyarakat

Based on the educational video produced by the male cadres, the message was delivered using a point-of-view (POV) approach, depicting the experience of a santri before, during, and after suffering from anemia until recovery, with the Islamic boarding school as the setting. The video was designed to evoke empathy while conveying educational messages in a humorous manner. It was produced in landscape format, with AI-generated voiceover, clear background music, and multiple camera angles to avoid monotony. A positive aspect of this media is its ability to visually demonstrate the symptoms experienced by individuals with anemia—such as paleness, fatigue (commonly referred to as 5L: tired, weak, lethargic, lazy, and listless), and lack of concentration—delivered humorously to help viewers better relate to the condition.

Meanwhile, the female cadres proposed a drama-style video depicting a santri with anemia in her daily life at the boarding school. This video was also designed to evoke empathy while presenting educational messages in a more realistic manner. It was produced in portrait format, similar to Instagram reels, with narration provided by the cadres themselves. However, the voice of the characters in the drama was not very clear, as it relied on original video audio without dubbing, and the camera angles used were limited. A positive element of this video is that, in addition to portraying the daily struggles of anemia, the cadres included messages encouraging viewers to seek care at the puskesmas and highlighted preventive measures after undergoing laboratory examinations.

Both media products were commendable for their narrative and visual approaches. According to logbook records, the development of each video took less than one week during the holiday period for both male and female cadres. To further assess the effectiveness of the media, we conducted evaluations involving

five male and five female students. The following section presents the results of content and quality assessments of the cadre-produced media as perceived by the students:



Gambar 3. The Results of Content and Quality Assessments on Media
Source: Community Engagement

Based on the results of the media evaluation conducted by the students, the video created by the male santri was assessed by male santri, while the video produced by the female santri was assessed by female santri. This evaluation method was applied due to the pesantren's policy of separating activities between male and female students. The findings revealed that, in terms of both content and media quality, the video produced by the male santri was rated higher than that of the female santri. However, there were two aspects in which both groups received equally favorable evaluations, namely the appropriateness of the video for the target audience's age and the clarity of the language used. Additionally, in the aspect of delivery, the female santri's video was rated higher than that of the male santri, particularly because it presented a clearer storyline that was closely related to the daily life of students in the pesantren.

Anemia Education and Iron–Folic Acid Tablet (TTD) Consumption

In this activity, a total of 60 female santri attended and participated in an outdoor educational session on anemia and IFA (iron–folic acid) supplementation. Following the session, participants were provided with drinking water, oranges, and IFA tablets for consumption. The exact number of students who consumed the tablets could not be determined, although it was observed that some refrained from taking them because they had not yet eaten breakfast or were fasting. The collective IFA consumption session was conducted in accordance with the Ministry of Health guidelines (2020), which recommend that students eat beforehand prior to taking the supplement.

CONCLUSION

In conclusion, most cadres demonstrated good knowledge about anemia, with returning cadres showing higher levels of understanding than new cadres, providing a strong foundation for further empowerment. The community engagement program successfully strengthened santri husada cadres as peer educators through the development of educational videos and outdoor education activities, which promoted healthier attitudes and behaviors among students and supported the goal of creating an anemia-free young generation. It is recommended that cadres continue educating their peers and that future refresher sessions include pre- and post-test evaluations to measure knowledge improvement, along with expert assessments of educational media content and delivery for ongoing development. Although the program has shown that cadres can act as health pioneers within the pesantren, future anemia-prevention initiatives would be more effective if designed directly by the cadres themselves under the guidance of Poskestren mentors.

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