

Enhancing Public Health Through Free Health Screening for the Elderly and Blood Donation: A Model for Sustainable Community Engagement

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Abstract

This study aims to assess the impact of a free health screening program for the elderly and a blood donation drive in enhancing public health awareness and community engagement. The increasing prevalence of non-communicable diseases among the elderly and the high demand for blood donations underscore the need for such initiatives. The study employed a community-based intervention approach, incorporating health screenings for 40 elderly participants and a blood donation drive involving 45 donors. The methodology included medical assessments, surveys, and observational data collection. Findings indicate that 35% of elderly participants were diagnosed with hypertension, 20% with elevated blood glucose levels, and 10% with high uric acid levels. Furthermore, 80% of blood donors expressed willingness to participate in future donation activities. Nutritional support, including whole wheat bread and mung bean extract for the elderly and iron supplements with isotonic beverages for blood donors, was provided to aid recovery and promote healthy habits. These results highlight the significance of integrated healthcare initiatives in fostering preventive health practices and increasing voluntary blood donations. The study suggests expanding the scope of health screenings and strengthening digital outreach to enhance public participation. Future research should involve larger sample sizes to validate these findings and explore additional factors influencing health awareness and donor retention. Overall, this study provides valuable insights into the effectiveness of community-driven health programs in promoting sustainable healthcare practices.

Keywords:

Free health screening; Elderly care; Blood donation; Public health awareness; Community service.

Abstrak

Makalah ini bertujuan untuk mengevaluasi dampak program pemeriksaan kesehatan gratis bagi lansia dan kegiatan donor darah dalam meningkatkan kesadaran kesehatan masyarakat serta partisipasi komunitas. Peningkatan prevalensi penyakit tidak menular pada lansia dan tingginya permintaan donor darah menunjukkan perlunya inisiatif semacam ini. Studi ini menggunakan pendekatan intervensi berbasis

komunitas dengan melibatkan 40 lansia dalam pemeriksaan kesehatan dan 45 peserta dalam donor darah. Metodologi penelitian mencakup pemeriksaan medis, survei, dan observasi. Hasil penelitian menunjukkan bahwa 35% lansia didiagnosis dengan hipertensi, 20% mengalami peningkatan kadar glukosa darah, dan 10% memiliki kadar asam urat tinggi. Selain itu, 80% pendonor darah menyatakan kesediaannya untuk kembali mendonorkan darah di masa mendatang. Untuk mendukung pemulihan peserta, lansia menerima roti gandum dan minuman sari kacang hijau, sedangkan pendonor darah diberikan suplemen zat besi dan minuman isotonik. Temuan ini menegaskan pentingnya program kesehatan berbasis komunitas dalam meningkatkan praktik pencegahan dan meningkatkan partisipasi masyarakat dalam donor darah. Studi ini merekomendasikan perluasan cakupan pemeriksaan kesehatan dan peningkatan kampanye digital untuk meningkatkan keterlibatan masyarakat. Penelitian di masa depan sebaiknya melibatkan sampel yang lebih besar guna memvalidasi temuan ini dan mengeksplorasi faktor lain yang memengaruhi kesadaran kesehatan dan retensi pendonor darah. Secara keseluruhan, penelitian ini memberikan wawasan berharga mengenai efektivitas program kesehatan berbasis komunitas dalam mendorong praktik kesehatan yang berkelanjutan.

Kata Kunci:

Pemeriksaan kesehatan gratis; Perawatan lansia; Donor darah; Kesadaran kesehatan Masyarakat; Pengabdian masyarakat.

1. INTRODUCTION

One of the key indicators of a country's Human Development Index (HDI), as set by the United Nations Development Programme (UNDP), is life expectancy. Life expectancy serves as a crucial measure of public health, representing the estimated number of years a person is expected to live (Derakhshanfar, 2019). According to the Central Bureau of Statistics BPS, (2024), Indonesia has experienced a steady increase in life expectancy over the past decade. In 2023, the average life expectancy in Indonesia reached 73.93 years, which is 3.34 years higher than in 2014. This demographic shift has led to a growing elderly population, making health issues among older adults a critical concern (Basrowi et al., 2021). Elderly individuals are particularly vulnerable to non-communicable diseases (NCDs) such as hypertension, diabetes, and cardiovascular disorders (Chobe et al., 2022). Access to healthcare services remains limited for many elderly Indonesians, especially those from underprivileged backgrounds (Fitriani & Febrieta, 2024; Lativa et al., 2016). Regular health screenings are essential for the early detection of diseases and for improving the overall well-being of the elderly (Kanninen et al., 2023; Teodhora et al., 2024).

Based on WHO standards, the minimum blood requirement in a country is 2 percent of the population (World Health Organization, 2023). The demand for blood donations in Indonesia remains high (Azizah et al., 2024; Lewin et al., 2024; Saragih et al., 2024). However, public awareness and participation in blood donation initiatives are still relatively low (Azizah et al., 2024). Currently, Indonesia records 6–10 blood donors per 1,000 people, a figure that is low compared to other countries in Asia (Situmorang et al., 2020). This limited participation can be attributed to several factors. One of the primary reasons is a lack of awareness regarding the benefits of blood donation. (Huriani et al., 2023). Additionally, low levels of education and limited access to information further hinder participation. Residents in remote areas also face logistical challenges in accessing donation centers, reducing overall community involvement (Laksono et al., 2023; Pratama & Nuraini, 2023). Beyond supporting patients in need, blood donation offers health benefits to donors, such as improved cardiovascular health and reduced iron overload (Gasparovic Babic et al., 2024; Ilyas et al., 2023). Community-based health initiatives that combine free health screenings with blood donation drives have proven effective in raising public health awareness and increasing community engagement in health-related activities (Du & Mu, 2022; Hardiyanti et al., 2024; Wardhana et al., 2024).

Integrating health screening services with blood donation programs offers a comprehensive approach to addressing public health challenges. For elderly participants, this integration not only facilitates access to preventive health services but also fosters social engagement through participation in community activities. However, several cultural and logistical challenges persist in Indonesia. Cultural barriers include misconceptions about the adverse effects of blood donation, fear of medical procedures, and low health literacy (Alanazi et al., 2023; Arshad et al., 2024; Pratama & Nuraini, 2023). Logistical issues, such as transportation difficulties and limited access to healthcare facilities in rural areas, further impede participation (Anggraini, 2023; Laksono et al., 2023).

Previous studies have demonstrated the effectiveness of free health screenings in detecting NCDs early and raising awareness of the importance of a healthy lifestyle (Prihanti et al., 2022; Sujarwoto & Maharani, 2022). However, there is a lack of literature examining the integration of elderly health screenings with blood donation activities as a comprehensive community engagement initiative. Addressing this gap, the present study aims to implement a free health screening program for the elderly and a blood donation drive while assessing their impact on public health awareness and community participation.

NUSANTARA (Nahdlatul Ulama Science and Cultural Art Olimpiad) is one of the programs community service initiated by the National Department V of KMNU (Keluarga Mahasiswa Nahdlatul Ulama). This event is a competition in science and arts among universities affiliated with KMNU in Indonesia. In 2023, KMNU integrated free health screenings and blood donation programs into the event, aiming to raise awareness about the importance of early disease detection in the elderly and to promote voluntary blood donation. The academic environment was chosen as the location for this program, as it provides a strategic platform to encourage blood donation. Academics are considered to have higher social awareness and can serve as agents of change by promoting these activities within the broader community.

The dissemination of information about blood donation activities should be tailored to the target participants. Health promotion through social media has proven effective in increasing health knowledge and encouraging positive behavioral changes (Musthofa & Sani, 2024). Social media platforms also have great potential as tools for promoting health initiatives, particularly among younger populations.

Integrating health screenings for the elderly with community-based initiatives addresses challenges such as limited access to information, weak awareness of early health detection, and restricted access to healthcare facilities. Therefore, information dissemination efforts should include direct outreach to elderly participants, providing transportation support or conducting home visits where necessary.

This study is expected to contribute to the development of an effective community service model that enhances healthcare access for elderly individuals and promotes voluntary blood donation. The findings of this research may serve as a reference for policymakers, healthcare practitioners, and community-based organizations in designing similar health programs.

The structure of this paper is as follows: The Methodology section outlines the program design, implementation procedures, and evaluation methods. The Results and Discussion section presents key findings from the initiative and discusses its implications. Finally, the Conclusion summarizes the main findings and provides recommendations for future research and practice.

2. METHOD

2.1. Study Design

This study employed a community-based intervention approach (Haldane et al., 2019; Hassen et al., 2022; Yulfi et al., 2025) to assess the impact of free health screenings and blood donation programs on public health awareness and participation (Chimberengwa & Naidoo, 2020). A descriptive research design was used to evaluate the effectiveness of the programs through qualitative and quantitative data collection.

2.2. Study Location and Participants

The study was conducted at Auditorium Prof. Abdul Kahar Mudzakkir, Universitas Islam Indonesia Yogyakarta. The participants for the health screening program were elderly individuals residing in Umbulmartani, Ngemplak, Sleman, DI Yogyakarta, while the blood donation drive included university students, faculty members, staff, and the general public from Yogyakarta. The health screening program involved 40 elderly participants, and the blood donation drive attracted 45 donors. Blood donors were selected through a voluntary registration process open to the academic community of Universitas Islam Indonesia and the general public of Yogyakarta. Meanwhile, participants for the free health screening were selected through voluntary registration following coordination with local village officials, such as the dukuh, neighborhood heads (RT and RW), and the local youth organization (Karang Taruna). This approach ensures ethical participation; however, it may introduce selection bias.

2.3. Program Implementation

2.3.1. Free Health Screening for the Elderly

The free health screening program was conducted at the Auditorium Prof. Abdul Kahar Mudzakkir, Universitas Islam Indonesia Yogyakarta, attended by 40 elderly participants from Umbulmartani, Ngemplak, Sleman. The program provided essential health services, including blood pressure measurement, blood glucose and uric acid testing, as well as general consultations. As shown in Figure 1, medical personnel assisted elderly participants in undergoing health screenings. Furthermore, Figure 2 depicts the interactive consultation sessions where participants received guidance on maintaining a healthy lifestyle and managing health conditions.



Figure 1. Elderly participants undergoing blood pressure and glucose level checks during the free health screening program.



Figure 2. Consultation session between medical personnel and elderly participants regarding their health conditions.

The free health screening was conducted by two medical doctors and two nurses from Lembaga Kesehatan Nahdlatul Ulama Wilayah DI Yogyakarta. The following health assessments were performed:

- a. Blood pressure measurement
- b. Blood glucose level testing
- c. Uric acid level testing
- d. General health consultations
- e. Basic medical treatment for mild conditions
- f. Nutritional counseling and health education

After the screening, elderly participants received health education on preventive healthcare practices and maintaining a healthy lifestyle. They were also provided with free multivitamin supplements to support their overall well-being.

To support the nutritional well-being of the elderly participants, whole wheat bread and mung bean extract beverages were provided after the screening. Whole wheat bread is rich in fiber, vitamins, and minerals that contribute to cardiovascular health and digestion in older adults (Capurso, 2021; Guo et al., 2022). Additionally, mung bean extract contains high levels of protein, antioxidants, and essential nutrients that support immune function and blood sugar regulation (Hou et al., 2019; Muchimapura et al., 2024).

2.3.2. Blood Donation Drive

The blood donation program successfully attracted 45 donors, including students, faculty members, and local community members. The event was conducted in collaboration with the Indonesian Red Cross (PMI), ensuring that donors met the necessary health criteria before donation.



Figure 3. A donor participating in the blood donation drive under the supervision of a PMI medical officer.



Figure 4. A donor participating in the blood donation drive under the supervision of a PMI medical officer.

Figure 3 illustrates a donor undergoing the blood donation process under the supervision of a PMI medical officer. Additionally, Figure 4 highlights another donor receiving post-donation care, ensuring the safety and well-being of all participants.

The blood donation program was conducted in collaboration with Palang Merah Indonesia (PMI). The process involved:

- a. Screening of potential blood donors to ensure eligibility.
- b. Blood donation procedure, which included pre-donation health check-ups and post-donation care.
- c. Provision of refreshments and donor certificates to encourage participation.

To assist in the post-donation recovery process, participants were provided with iron supplements and isotonic beverages. Iron supplementation is crucial after blood donation to replenish hemoglobin levels and prevent iron deficiency (Mantadakis et al., 2022). Isotonic beverages help maintain electrolyte balance and hydration, supporting overall recovery and energy restoration (Rowlands et al., 2022).

2.4. Data Collection and Analysis

- a. Data were collected using both qualitative and quantitative methods: Surveys and Questionnaires – Participants completed pre- and post-event surveys to assess changes in their health awareness and perceptions regarding the importance of regular health check-ups and blood donation.
- b. Observational Data – Researchers documented participants' engagement and interactions during the events.
- c. Medical Records – Data from health screenings and blood donation logs were analyzed to identify common health issues among participants and assess blood donation rates.

The relatively small sample size limits the generalizability of the findings to a broader population. However, it provides valuable insights that can inform larger-scale community health interventions in the future.

3. RESULTS AND DISCUSSION

3.1. Participation and Engagement

A total of 40 elderly participants underwent free health screenings, while 45 individuals participated in the blood donation program. The high level of participation indicates strong community interest in accessible healthcare services and voluntary blood donation initiatives. Similar studies have also shown that free health services significantly increase community engagement in preventive healthcare (Alfaaza, 2024; Ocloo et al., 2021).

3.2. Health Screening Findings

The health assessments identified several common health conditions among the elderly participants in Table 1.

Tabel 1. Screening Findings

No	Findings	Percentage
1	had high blood pressure (hypertension).	35%
2	had elevated blood glucose levels, indicating potential diabetes risks	20%
3	had high uric acid levels, commonly associated with joint pain and arthritis	10%

Source: Data processed

For percentage calculations in public health analysis, the method used is usually based on prevalence, incidence, or proportion of the total population examined. The percentages in Table 1 Health Screening Findings are calculated using the following basic formula.

$$percentage = \frac{Number\ of\ cases}{Total\ sample\ size} \times 100\%$$

Adopted from Beaglehole & Bonita, (2008); Celentano & Szklo, (2019)

These findings highlight the prevalence of non-communicable diseases among the elderly and emphasize the need for regular screenings to facilitate early detection (Malau et al., 2024; Utami et al., 2024).

3.3. Impact of the Blood Donation Drive

The blood donation event successfully collected 45 blood bags, contributing to local blood banks. A survey conducted among donors revealed that 80% of participants expressed willingness to donate blood again in the future. This aligns with previous studies indicating that well-organized blood donation drives can enhance long-term donor retention (Azizah et al., 2024; Ferguson, 2021). Despite the encouraging participation rates, certain community members refrained from engaging in the health screenings and blood donation programs. Key reasons identified include fear of potential health complications, lack of understanding about the benefits of early health screening, and persistent misconceptions about the risks associated with blood donation. These findings are consistent with previous studies highlighting misinformation and health literacy challenges in rural Indonesian settings (Budiyanti et al., 2023; Ohta et al., 2024; Sutrisni et al., 2023). In addition, logistical and financial limitations of the organizing committee also affected the participation rate of participants.

3.4. Community Perception and Awareness

Post-event surveys revealed that 85% of elderly participants reported an increased awareness of the importance of regular health check-ups, while 75% of blood donors indicated that they gained new knowledge regarding the health benefits of donating blood. These results suggest that such initiatives play a crucial role in fostering public health awareness and encouraging proactive health-seeking behaviors (Onuoha et al., 2024; Purwaningsih et al., 2023).

4. CONCLUSION

This study demonstrated that the free health screening program effectively identified common health conditions among elderly participants, with 35% diagnosed with hypertension, 20% with elevated blood glucose levels, and 10% with high uric acid levels. The blood donation drive successfully recruited 45 donors, with 80% expressing willingness to donate again in the future. These findings underscore the significance of community-based healthcare interventions in promoting preventive healthcare practices and increasing voluntary blood donation. The study contributes to existing knowledge by showcasing how integrated health screening and blood donation programs can enhance public health engagement and encourage healthier behaviors. Future implementations of similar programs should consider expanding the scope of health

screenings to include cholesterol and kidney function tests, implementing digital outreach campaigns to raise public awareness, and fostering corporate partnerships to ensure sustainable program funding. Despite the contributions of this study, its limitations include a relatively small sample size, which may affect the generalizability of the findings. Future research should involve larger and more diverse participant groups to validate these results and explore additional factors influencing participation in health initiatives. Overall, this study provides valuable insights into the impact of community-driven health screening and blood donation programs, serving as a foundation for developing more sustainable and impactful healthcare initiatives that benefit underprivileged populations and promote proactive health management. To enhance scalability and sustainability, future initiatives should establish partnerships with local health offices and collaborate with NGOs or nonprofit organizations specializing in healthcare. Additionally, integrating mobile health clinics can help reach underserved populations. Furthermore, digital outreach campaigns leveraging popular platforms, such as WhatsApp and Facebook, can be optimized to encourage community participation in blood donation programs. To increase participation in free health screenings for the elderly, coordination with local village officials—such as the dukuh, neighborhood heads (RT and RW), and the local youth organization (Karang Taruna)—is essential to mobilize community members. Future studies with larger, randomized samples are needed to confirm these findings and enhance their generalizability.

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