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# 1,000 Donors in a Day: A Collaborative Blood Donor Recruitment Strategy in North Lampung

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## ABSTRACT

**Background:** Ensuring a safe and sustainable blood supply presents a persistent challenge in geographically dispersed regions. This study aimed to describe the collaborative strategies employed by the North Lampung Blood Transfusion Unit (BTU), Indonesian Red Cross (IRC), and the Yayasan Relawan Donor Darah (YRDD) to improve voluntary blood donor mobilization and blood availability, and to evaluate the role of community-based and digital communication approaches within this collaboration.

**Methods:** A descriptive mixed-methods design was used. Quantitative data were extracted from official BTU IRC North Lampung administrative records covering January 2023 to December 2024, comparing monthly blood collection volumes before (January–August 2023) and after (September 2023–December 2024) initiation of the collaboration. Qualitative data were collected through semi-structured interviews with BTU IRC officers and YRDD coordinators, observational notes from donor recruitment activities, and a review of internal organizational documentation. Thematic analysis was applied to qualitative data, with triangulation conducted across multiple data sources to enhance credibility.

**Results:** Following the initiation of collaboration in September 2023, both the volume and consistency of blood collection increased markedly. The flagship '1,000 Donors in a Day' event on 16 September 2023 attracted 1,004 presenting donors and yielded 702 blood bags collected in a single day, a record achievement for North Lampung Regency. Over the subsequent 15 months, eight collaborative blood donation events were conducted, collectively yielding 3,082 presenting donors and 2,529 blood bags collected. Key strategies included blood-type-based WhatsApp Groups, social media outreach via Instagram and Facebook, personalized donor reminders, and community-based mobilization through YRDD volunteers. Annual blood collection in 2024 reached approximately 9,899 bags, representing progress toward, but remaining below, the regional safe threshold of approximately 12,000 bags per year.

**Conclusion:** Community-based participatory approaches supported by digital communication tools may offer a replicable model for voluntary blood donor recruitment in geographically dispersed settings, subject to local adaptation, institutional commitment, and sustained volunteer engagement.

**Keywords:** Blood Donation, Voluntary Blood Donation, Community Collaboration, Blood Donor Recruitment.

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## INTRODUCTION

A safe and sufficient blood supply is an essential component of functional health systems worldwide. The World Health Organization (WHO) recommends that countries develop voluntary, non-remunerated blood donation (VNRBD) systems capable of meeting clinical demand, with a widely referenced benchmark of at least 10–20 donations per 1,000 population annually and a target equivalent to at least 2% of the national population.<sup>1</sup> Maintaining adequate blood supply remains challenging in many low-

and middle-income countries (LMICs), particularly in regions characterized by geographic dispersion, population heterogeneity, and limited public health infrastructure.<sup>2</sup>

Blood transfusion is an irreplaceable medical intervention in emergency obstetric care, surgical procedures, trauma management, chronic anemia treatment, and oncological support.<sup>1</sup> In Indonesia, the national blood donation system is managed primarily through the Indonesian Red Cross (IRC) Society. According to IRC data, national blood collection reached approximately 5.5

million bags in 2024, approaching, but not yet meeting, the estimated national demand of approximately 5.7 million bags per year.<sup>3,4</sup> At the subnational level, persistent gaps in blood availability remain, particularly in districts with limited health infrastructure and geographic barriers.

Blood donor recruitment and retention are multifaceted challenges. Documented barriers to voluntary blood donation include inadequate knowledge about the safety and benefits of donation, lack of awareness of donation opportunities, fear of needles or adverse effects, transportation difficulties, and limited trust in health

institutions.<sup>5,6</sup> These barriers are compounded in geographically dispersed areas, where mobile blood collection units may face significant logistical constraints in reaching rural communities.<sup>7</sup>

North Lampung Regency (Kabupaten Lampung Utara) is an administrative district in Lampung Province, Sumatra, Indonesia. As of 2023, the regency's population was approximately 659,890, distributed across 23 sub-districts and more than 200 villages.<sup>8</sup> Blood collection services are managed by BTU IRC North Lampung, based in the district capital of Kotabumi. Wide geographic dispersion, inadequate transportation infrastructure, and low public awareness of voluntary blood donation have historically constrained the regency's blood supply. Regional blood collection in 2024 totaled approximately 9,899 bags, falling short of the estimated regional safe threshold of approximately 12,000 bags per year. Monthly supply has been characteristically variable, creating periodic shortfalls that impair the ability to respond to urgent transfusion requests.

Community-based participatory approaches and digital communication platforms have been proposed as complementary strategies to address recruitment and retention challenges in blood donation systems. Evidence from multiple settings suggests that social networks, peer encouragement, and mobile technology can extend the reach of blood donor recruitment beyond traditional institutional channels.<sup>9,10</sup> WhatsApp has emerged as a widely used communication tool in Indonesia and other LMICs, offering potential for rapid information dissemination, group coordination, and personalized donor engagement.<sup>11</sup>

In response to the above challenges, BTU IRC North Lampung initiated a strategic collaboration with the *Yayasan Relawan Donor Darah* (YRDD), a community-based volunteer organization originally formed to assist thalassemia patients in accessing regular blood supplies. YRDD comprises approximately 23 active members drawn from diverse professional backgrounds, including educators, public servants, entrepreneurs, and community health workers. Over time, YRDD developed into a broader

platform for voluntary blood donation education and community mobilization in North Lampung Regency.

This study aimed to describe the collaborative strategies implemented by BTU IRC North Lampung and YRDD, examine changes in blood collection volume and consistency associated with this collaboration, and identify the role of community-based and digital communication approaches in enhancing blood donor mobilization.

## METHODS

### Study Design

This study used a descriptive mixed-methods design, integrating quantitative and qualitative components. Quantitative data were used to describe blood collection trends before and after the initiation of the BTU IRC–YRDD collaboration. Qualitative data were used to characterize collaborative strategies, implementation processes, and contextual factors. Given the descriptive design, no causal inference is drawn from the findings.

### Study Setting

The study was conducted at BTU IRC North Lampung, the regional blood transfusion unit responsible for blood collection and supply management in North Lampung Regency, Lampung Province, Indonesia. The institutional collaboration partner, YRDD, is a community-based voluntary organization established in North Lampung to support blood donation activities and to assist thalassemia patients in accessing regular blood supplies.

### Quantitative Data Source and Verification

Quantitative data were extracted from official BTU IRC North Lampung administrative records. Data fields included the date of each blood collection activity, the number of donors presenting, the number of successful blood collection procedures, and the total volume of blood bags collected, recorded for each month from January 2023 to December 2024. The study period was divided into a pre-collaboration phase (January 2023 to August 2023) and a post-collaboration phase (September 2023 to

December 2024), corresponding to the formal initiation of BTU IRC–YRDD collaboration in September 2023.

Data accuracy was supported by cross-referencing monthly BTU IRC activity reports, collaborative event documentation, and internal administrative records, including SIMDONDAR (BTU IRC's internal donor information system). Duplicate entries, incomplete records, and apparent data inconsistencies were reviewed and reconciled with the responsible BTU IRC administrative staff.

### Qualitative Data Collection

Qualitative data were gathered through three complementary sources: semi-structured interviews, direct observation, and documentary review. Semi-structured interviews were conducted with BTU IRC officers and YRDD coordinators. Interview questions focused on the collaborative processes, communication strategies, challenges encountered during implementation, and perceived outcomes of the partnership. Observational data were gathered during blood donor recruitment activities, collaborative events, and community mobilization sessions. Field notes documented the organization of events, volunteer coordination dynamics, and community engagement processes. Documentary review encompassed internal BTU IRC and YRDD records, including event activity reports, social media posts, WhatsApp communication records, and meeting minutes.

### Informant Selection and Bias Minimization

Informants were selected purposively based on their direct involvement in donor recruitment, event organization, digital communication coordination, and blood supply management. The selection aimed to include variation in roles, encompassing BTU IRC management staff, operational personnel, YRDD coordinators, and field volunteers, to achieve diversity and relevance of perspectives consistent with qualitative research standards. In qualitative inquiry, representativeness is understood as the diversity and relevance of perspectives rather than statistical representativeness. Potential

informant bias was acknowledged, as all key informants were directly involved in the collaboration under study and may have been predisposed to reporting outcomes favourably (social desirability bias). Bias minimization strategies included: (i) triangulation of interview data with observational notes, quantitative administrative records, and documentary sources; (ii) use of open-ended interview questions to allow informant-led narrative; and (iii) comparison between institutional (BTU IRC) and community (YRDD) perspectives. Reflexive discussion by the research team regarding positional bias is recommended as an additional methodological step.

### Qualitative Data Credibility and Validation

Qualitative trustworthiness was addressed through the following approaches. Data triangulation was applied across the three sources, interviews, observational field notes, and documentary evidence, to corroborate and contextualize emerging findings. Thematic analysis was conducted through a process of familiarisation with interview transcripts, generation of initial codes, grouping of codes into emerging themes, and interpretive synthesis. Member checking, in which key findings were shared with informants for verification and feedback, is recommended if not yet performed. An audit trail of analytic decisions was maintained throughout the analysis process.

### Data Analysis

For the quantitative component, descriptive analysis was applied to compare monthly blood collection volumes across the pre-collaboration and post-collaboration periods. Monthly totals, percentage changes, and trend patterns were examined. No inferential statistical tests were performed, consistent with the descriptive study design. Data are presented narratively and in tabular form. A line graph depicting monthly blood collection trends across the full 24-month study period is recommended to accompany this manuscript. For the qualitative component, thematic analysis was applied as described above. Key

thematic areas emerging from interview and observational data included: community trust and relationship building; rapid digital communication through WhatsApp Groups; social media outreach and youth engagement; personalized donor reminders and retention; volunteer leadership and peer mobilization; and institutional-community partnership dynamics.

## RESULTS

Prior to the initiation of the BTU IRC–YRDD collaboration in September 2023, monthly blood collection at BTU IRC North Lampung was characteristically variable. During the pre-collaboration period (January 2023 to August 2023), monthly collection volumes fluctuated without a stable upward trajectory, and aggregate supply failed to consistently meet estimated regional demand. Following the initiation of collaboration in September 2023, both the volume and consistency of blood collection increased. The most pronounced single-month improvement coincided with the inaugural Table 1 collaborative mass blood donation event in September 2023. Annual blood collection in 2024 reached approximately 9,899 bags, representing meaningful progress compared to pre-collaboration levels, though still below the regional safe threshold of approximately 12,000 bags per year. Monthly supply during the post-collaboration period demonstrated greater stability relative to the pre-collaboration phase.

The BTU IRC–YRDD collaboration produced eight joint blood donation events between September 2023 and December 2024. These events were organized with community-based mobilization approaches and broad social media promotion, enabling outreach across diverse population groups and geographic areas within North Lampung Regency. Table 1 summarises the collaborative blood donation events.

The inaugural event of 16 September 2023 stands as a defining milestone in the collaboration. Held at GOR Sukung Kotabumi, it attracted 1,004 presenting donors and yielded 702 blood bags in a single day, a record achievement for North Lampung Regency. This event

demonstrated the feasibility of large-scale community mobilization through the BTU IRC–YRDD partnership and catalyzed the development of a sustained, ongoing collaboration across subsequent months. Across all eight events combined, 3,082 donors presented and 2,529 blood bags were collected, yielding an overall collection efficiency of approximately 82% (Table 1). Variation in event scale and collection outcomes reflected differences in venue, mobilization capacity, and contextual factors specific to each event.

Qualitative data from interviews, observations, and documentary review identified several interconnected strategies that shaped the BTU IRC–YRDD collaborative model. The flagship event model, exemplified by ‘1,000 Donors in a Day’, served not only as a mechanism for blood collection but also as a community trust-building exercise. Events were held in central, accessible public venues and were promoted extensively through YRDD volunteer networks and BTU IRC’s official channels. The events generated broad public visibility for voluntary blood donation and demonstrated institutional-community alignment in purpose and effort. YRDD established and maintained a network of WhatsApp Groups organized by blood type (A, B, AB, and O), supplemented by a broader community peduli thalassaemia group. These groups collectively engaged more than 600 active members. The WhatsApp Groups served multiple functions: rapid dissemination of blood need alerts, coordination of donor presentations, peer encouragement among members, and ongoing public health education. This infrastructure enabled YRDD to mobilize donors in response to urgent requests, particularly for thalassaemia patients requiring regular transfusions, often within hours of a request being issued. Both BTU IRC and YRDD actively utilized social media platforms, primarily Instagram and Facebook, to disseminate event announcements, share donor testimonials, promote health education content, and engage younger demographic groups as prospective voluntary donors. Individual staff members and YRDD volunteers also leveraged personal social media accounts to amplify outreach beyond official

**Table 1. Summary of Collaborative Blood Donation Events, BTU IRC North Lampung and YRDD (September 2023–December 2024)**

No.	Date	Presenting Donors (n)	Blood Bags Collected (n)
1	16 September 2023*	1,004	702
2	2 March 2024	491	402
3	21 April 2024	288	263
4	2 May 2024	37	34
5	18 July 2024	434	378
6	11 August 2024	129	120
7	29 September 2024	249	230
8	17 October 2024	450	400
<b>Total</b>		3,082	2,529

\*'1,000 Donors in a Day' inaugural event; 16 September 2023, GOR Sukung Kotabumi.

institutional pages, extending reach into personal and professional networks.

Drawing on BTU IRC's internal donor information system (SIMDON DAR) and YRDD's community database, personalized reminder messages were sent to individual donors via WhatsApp at appropriate donation intervals. This approach aimed to promote repeat donation, reinforce individual relationships between volunteers and donors, and strengthen long-term donor retention. Informants described these personalized communications as a key factor in improving donor return rates.

Interview and observational data reflected several cross-cutting themes. Trust and relationship building emerged as foundational: YRDD volunteers' pre-existing social ties within North Lampung communities were described as critical in reducing hesitancy toward blood donation and fostering willingness to participate. Rapid communication was identified as a key operational advantage of WhatsApp-based coordination, particularly for emergency mobilization. Peer encouragement and community ownership, wherein YRDD members functioned as informal advocates for voluntary donation within their professional and social networks, were recognized as important mobilization mechanisms. Institutional openness on the part of BTU IRC, including willingness to share planning responsibilities, provide logistical support, and recognize community leadership, was identified by informants as a critical enabling condition for the partnership.

## DISCUSSION

This study described a community-institutional collaboration between BTU IRC North Lampung and YRDD that was associated with improvements in blood donor mobilization and blood supply consistency in a geographically dispersed Indonesian district. The collaborative model integrated mass mobilization events, digital communication platforms, and personalized donor engagement within a broader framework of institutional-community partnership. The following sections interpret these findings through the lenses of Community-Based Participatory Research (CBPR) principles and Social Capital Theory and discuss the implications and limitations of digital communication approaches.

The BTU IRC–YRDD collaboration embodies several core principles associated with community-based participatory research (CBPR) and community-based participatory approaches.<sup>12,13</sup> CBPR is characterized by equitable partnership between formal health institutions and community organizations, co-learning, mutual capacity building, and the recognition of community members as active agents rather than passive beneficiaries of health services.<sup>12</sup>

In the present collaboration, BTU IRC did not deploy YRDD merely as a mobilization instrument; rather, it engaged YRDD as a co-planning partner with a recognized agency in strategy development and implementation. Communication between the two organizations was described as bidirectional and egalitarian.

BTU IRC provided institutional legitimacy and logistical support, while YRDD contributed community networks, relational trust, and volunteer capacity. This reciprocal partnership reflects the CBPR principle of equitable role recognition and co-production of public health solutions.<sup>13</sup>

CBPR frameworks further emphasize community-driven and locally adapted solutions.<sup>12</sup> The '1,000 Donors in a Day' event and the blood-type-based WhatsApp Group model both represent locally developed innovations responsive to North Lampung's specific demographic and geographic context, consistent with the place-based, culturally embedded orientation of CBPR. Similarly, CBPR emphasizes the importance of sustainability and community capacity building. Over 15 months, YRDD developed organizational competencies in donor coordination, digital communication management, and emergency mobilization, building what may be conceptualized as community health infrastructure for voluntary blood donation.

The mobilization mechanisms observed in this study can be interpreted through Social Capital Theory, which conceptualizes social capital as the norms, trust, and networks that facilitate collective action and information exchange within and between communities.<sup>14</sup> Three dimensions of social capital are particularly relevant to the findings.

Bonding social capital refers to strong ties within closely knit groups. YRDD volunteers leveraged their pre-existing relationships with thalassemia patients, repeat donors, and community members to encourage voluntary participation in blood donation. These close social ties reduced hesitancy, promoted trust in the donation process, and supported emergency donor mobilization within short timeframes.

Bridging social capital refers to weaker but broader ties that connect individuals across diverse social groups. YRDD's social media outreach, use of personal networks, and organization of large public events enabled connections across professional groups, age cohorts, religious communities, and geographic areas that would not otherwise be reached

through formal health institution channels alone. The broadening of the donor base to include younger populations reflects the bridging function of digital communication tools.

Linking social capital refers to vertical connections between community organizations and formal institutions. The formalization of the BTU IRC–YRDD collaboration represents linking social capital in operation. Community volunteers gained institutional backing, technical resources, and legitimacy, while BTU IRC gained community reach, relational trust, and mobilization capacity that its formal structures alone could not provide.<sup>14</sup>

The WhatsApp Groups, social media platforms, and personalized reminder systems functioned as technological infrastructure for sustaining and scaling all three dimensions of social capital — maintaining trust and reciprocity, facilitating information flow, and enabling rapid coordinated response to both routine and emergency blood supply needs.

The use of digital communication tools in blood donor recruitment is consistent with a growing body of evidence on mobile health (mHealth) and digital health promotion in LMICs.<sup>15</sup> WhatsApp has demonstrated utility as a community health communication tool in settings with high smartphone penetration, and its use in blood donor coordination has been reported from other IRC units in Indonesia.<sup>11</sup>

Nevertheless, digital approaches carry important limitations that must be acknowledged. Digital access is not universal; individuals without smartphones or reliable internet connectivity may be systematically excluded from digital recruitment strategies, potentially creating inequities in donor engagement. Privacy and data protection concerns arise when donor contact information is stored and transmitted through third-party applications such as WhatsApp, particularly in the absence of formal data governance frameworks. Message fatigue, reduced responsiveness due to high volumes of group notifications, is a recognized risk in WhatsApp-based health communication and should be managed through message frequency

governance. Misinformation about blood donation, while not documented in this study, remains a potential risk in unmoderated digital communication spaces. Operational sustainability may be compromised by over-reliance on individual volunteer administrators for group management, content moderation, and system maintenance.

Ethical handling of donor contact information, including explicit consent for digital communication, appropriate data storage standards, and protection of donor privacy rights, should be formalized within the institutional data governance framework of BTU IRC before broader or longer-term implementation.

The community-based mobilization model demonstrated in this study aligns with evidence from comparable settings. Community volunteer empowerment has been identified as an effective strategy for blood donor recruitment and retention in Indonesian contexts, including community-based blood donation village initiatives and community empowerment programs.<sup>9,10</sup> The use of digital reminders and WhatsApp-based coordination for donor retention has been reported from other IRC units, consistent with the findings of this study.<sup>11</sup> Internationally, community engagement approaches and social network-based strategies have been associated with improved donor recruitment and repeat donation rates.<sup>5,6,12–18</sup>

The present findings must, however, be interpreted within the constraints of the descriptive study design. Direct comparison with controlled interventions is not methodologically appropriate, and the observed improvements in blood collection may reflect multiple contributing factors beyond the BTU IRC–YRDD collaboration, including concurrent campaigns, seasonal variation, or institutional policy changes.

This study has several strengths. It provides detailed documentation of a community-institutional blood donation collaboration sustained over a 24-month period in a resource-limited, geographically dispersed Indonesian district, contributing an empirically grounded case study of a potentially replicable model. The mixed-methods design enabled both quantitative

assessment of blood collection changes and qualitative characterization of the collaborative processes and contextual factors underlying them. Data triangulation across administrative records, interviews, observational notes, and documentary sources was applied to enhance the credibility of findings.

Several limitations must be acknowledged. The descriptive study design did not include a concurrent control region, precluding causal attribution of the observed improvements to the BTU IRC–YRDD collaboration specifically. Potential confounding by concurrent factors, including seasonal blood donation campaigns, national health promotion initiatives, changes in institutional policy, or broader demographic trends, cannot be excluded. The study relied primarily on routine administrative records, the accuracy and completeness of which were subject to institutional data management practices. The selection of informants exclusively from among individuals directly involved in the collaboration introduces potential social desirability bias. Formal inter-rater reliability testing for qualitative coding was not performed; thematic development relied on a consensus-based approach, which should be acknowledged as a limitation. Generalizability of this specific model to other regions is limited by contextual factors unique to North Lampung, including pre-existing community networks, institutional leadership, and volunteer capacity. Adaptation to other settings would require local community mapping, institutional commitment, and investment in volunteer infrastructure.

## CONCLUSION

The collaboration between BTU IRC North Lampung and YRDD was associated with measurable improvement in blood donor mobilization and greater consistency in blood supply over the study period. The ‘1,000 Donors in a Day’ initiative demonstrated the feasibility of large-scale community-based mobilization in a geographically dispersed Indonesian district, while the sustained collaborative infrastructure, encompassing digital communication tools, community events, and personalized outreach, supported

ongoing donor engagement and repeat donation. The findings suggest that community-institutional partnerships grounded in CBPR principles and social capital mobilization may offer an effective, contextually adapted strategy for improving voluntary blood donation in resource-limited settings with geographic and infrastructural barriers. Digital tools, particularly WhatsApp-based group coordination and personalized reminders, appear to enhance both reach and donor retention when embedded within a broader, relationship-based collaboration framework.

## ETHICAL CONSIDERATIONS

This study used aggregated routine service data and qualitative information collected for program evaluation purposes. No individual donor-identifiable data were reported. The study was conducted in accordance with the principles of the Declaration of Helsinki and applicable national research ethics regulations.

## CONFLICT OF INTEREST

The authors declare no conflict of interest. The authors' institutional involvement in the described collaboration is acknowledged. The manuscript was prepared with an effort to present all data objectively.

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## AUTHOR CONTRIBUTIONS

SA is responsible for conceptualization, data collection, formal analysis, methodology, writing, original draft, writing review, and editing. AF is responsible for supervision, project administration, data validation, resources, and writing, review, and editing. Both authors read and approved the final manuscript.

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