

Short Communication

The role of social media in promoting voluntary blood donation during disasters: a short communication of the Lagos State bus-train collision

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ABSTRACT

Lagos State experienced a mass casualty involving a bus and a moving train on 09 March 2023. Despite only 0.58% of Lagos's population donating blood, the Lagos State Blood Transfusion Services (LSBTS) leveraged Twitter, community outreach and blood collection centre expansion, to mobilize voluntary blood donors and meet the sudden increased demand. This short communication describes the role of social media, in driving community engagement during disasters, while assessing changes in blood donation patterns and evaluating donor awareness. Within one hour of the disaster, the LSBTS official Twitter handle, posted information about the critical need for blood including, locations of designated donation centres. Number of likes, retweets and views of the post was monitored daily over five days. Information on first-time donors, donor deferrals and donation campaign awareness were captured from the donor registration form. The LSBTS records were assessed for changes in pre and post disaster donation patterns. Over five days, Twitter engagements reached a historic milestone of 3966 retweets, 1953 likes and 296,446 views, driving 70.4% of donor awareness. Compared to an average of 48 individuals recruited per donation drive, 372 voluntary donors were recruited on day 1, an increase of 87.1%. Additionally, 849 donors were recruited during the disaster response, comparable to eight weeks of routine collection. A deferral rate of 32.7% was noted with 65% being first time donors. Effective public communication remains crucial for donor recruitment and overall operational efficiency in regions aiming to improve disaster-response readiness in blood transfusion.

Keywords: Bus-train collision, Twitter, Social media, Lagos State Blood Transfusion Service

INTRODUCTION

Blood donation is a public health concern globally, playing a pivotal role in saving lives and improving health outcomes. It is particularly critical during emergencies and mass casualty incidents, where the demand for blood significantly surges. The World Health Organization (WHO) recommends that 1-2% of a nation's population should donate blood annually to ensure an adequate and stable supply for routine medical procedures and emergencies.¹ Unfortunately, this target is unmet in many parts of the world, especially in low- and middle-income

countries (LMICs), where healthcare infrastructure, public awareness and cultural perceptions about blood donation often pose significant barriers.² Blood is indispensable for various medical procedures, such as surgeries, maternal care, trauma management and the treatment of chronic illnesses. A lack of a reliable blood supply can lead to avoidable morbidity and mortality, particularly in resource-constrained settings.³ High-income countries generally have systems in place to achieve or surpass WHO's recommended donation rates. It is supported by robust infrastructure, public trust in healthcare systems and well-organized blood donation programs. In contrast,

LMICs like Nigeria struggle to meet this threshold due to limited resources, infrastructural deficits and societal misconceptions about blood donation.⁴

Nigeria, with a population exceeding 200 million, has a high demand for blood to meet its healthcare needs. Yet, the voluntary blood donation rate in the country is alarmingly low, with less than 1% of the population donating regularly. Lagos State, Nigeria's largest urban and commercial hub, exemplifies these challenges. Despite its population of over 20 million and significant healthcare needs, voluntary blood donation rates remain critically low. Records from the Lagos State Blood Transfusion Service (LSBTS) show that only 0.58% of the Lagos population donates blood annually, falling far short of the WHO's recommended 1-2%. In addition, of the over 115,000 units of blood collected annually across the state, less than 10% of these come from voluntary donors, with the remainder being family replacement donations.⁵ The inadequate blood supply in Lagos is compounded by chronic shortages that undermine the healthcare system's ability to respond effectively to both routine and emergency situations. Cultural beliefs and widespread misinformation further exacerbate the issue. Many individuals harbor misconceptions about the safety and health implications of donating blood, while others perceive the process as unsafe.⁶ Additionally, a general lack of awareness about the critical importance of regular blood donation and its life-saving potential limits public participation in voluntary blood donation campaigns.⁴ Addressing these barriers requires a coordinated effort involving public health campaigns, policy initiatives and the strategic use of technology. Public trust must be strengthened through awareness campaigns that debunk myths surrounding blood donation while emphasizing its safety, necessity and role in saving lives. In recent years, digital platforms have emerged as transformative tools for social mobilization, allowing health organizations to reach wider audiences more efficiently.

The challenges of low blood donation rates become even more pronounced during disasters or mass casualty events, where immediate and increased blood demand can overwhelm existing systems. In such situations, the availability of adequate blood supply is often the determining factor between life and death. Mass casualty incidents typically involve severe trauma cases that require timely blood transfusions to manage haemorrhagic shock and prevent fatalities.⁷ Ensuring that blood is sourced, tested and delivered efficiently during such crises places immense pressure on blood transfusion services, particularly in regions with limited resources. In Lagos, the challenges of meeting blood demand during emergencies are further compounded by the small pool of existing voluntary blood donors as well as infrastructural constraints, including inadequate transportation, limited storage capacity and insufficient processing facilities. Thus, addressing blood shortages in Lagos necessitates not only improving physical infrastructure but also enhancing community engagement and fostering a culture of voluntary blood donation.

METHODS

This short communication examines the effectiveness of the LSBTS's response during the bus-train collision that occurred on 09 March 2023, with a particular focus on the role of Twitter platform (prior to its rebranding as 'X') in the recruitment of voluntary donors. Hence, it contributes to understanding how technology can be harnessed to enhance blood donation systems, particularly during emergencies. In addition, by analyzing the strategy of combining public education, community involvement, innovative donor mobilization, infrastructure development and their outcomes, it explores the broader implications for improving blood donation rates and building resilient healthcare systems in Lagos and similar settings.

On 09 March 2023, about 8:00 a.m., Lagos State witnessed a tragic mass casualty incident when a full capacity public bus collided with a moving train in Ikeja. This catastrophic event resulted in numerous injuries and fatalities, demanding an immediate and robust emergency response. The Lagos State Ambulance Service (LASAMBUS) promptly informed the emergency response officer at LSBTS of the severity of the situation. The Lagos State Ambulance Service highlighted the urgent and extensive need for blood transfusions to treat the injured. At that time, the exact number of casualties and the volume of blood units required were unknown. The incident presented LSBTS with a critical challenge to meet the escalating demand for blood within an extremely limited timeframe. In response to the crisis, the LSBTS activated its emergency response protocol without delay. Key staff were mobilized and communication channels were established with the blood bank unit at the Lagos State University Teaching Hospital (LASUTH), Ikeja, where most of the victims were being transferred for treatment as well as the secondary healthcare facilities around the disaster location. A swift assessment of the existing blood stock revealed that supplies were critically low, particularly for O-type red cells, with only 34 units available (10 O rh D neg and 24 O rh D pos). Recognizing that O-type blood would likely be in high demand, LSBTS initiated a series of emergency interventions to maximize voluntary blood collection. These included launching a targeted social media campaign, expanding blood collection sites and engaging with non- governmental organisations (NGOs), religious bodies, youth groups and community leaders to encourage voluntary donations.

RESULTS

One of the most effective strategies deployed was the use of social media, particularly Twitter, to raise awareness and mobilize the public. Empathetic and urgent messages were shared on the official LSBTS Twitter page, emphasizing the dire need for blood donations. Messages such as "blood donation emergency!, there is a mass casualty at PWD Ikeja between a BRT and a train. please save lives by donating blood" and "thank you for being part of Nigeria's lifeline" were crafted to resonate emotionally with the public while providing practical

information, including all donation center locations and contact details. The social media campaign generated an immediate and overwhelming response. Within the first 24 hours, the posts garnered unprecedented levels of engagement, achieving 2,909 retweets, 1,271 likes and reaching an audience of 150,400 individuals (Table 1). By the fifth day, the campaign's impact had grown exponentially, amassing 296,446 views, 3966 retweets and 1953 likes (Table 1). This level of interaction marked a historic milestone for the LSBTS Twitter platform, demonstrating the immense power of social media in mobilizing public support during emergencies.

To complement the social media outreach, LSBTS rapidly expanded its operational capacity to accommodate the influx of potential donors. In collaboration with NGOs, community leaders, youth groups and religious bodies, 3 additional blood collection centers were opened. The hours of operation at all LSBTS voluntary blood donation centers were extended and a temporary blood donation camp was set up at LASUTH, the primary hospital treating victims. These measures ensured that logistical barriers to blood donation were minimized during this critical period. Furthermore, LSBTS collaborated with sister organizations in the state to maintain adequate blood storage capacity.

The combined efforts of social media engagement and expanded collection capacity yielded remarkable results. On the first day of the campaign alone (Table 1), 372 voluntary donors were recruited, an 87.1% increase compared to the average of 48 donors typically seen during routine drives. Over the subsequent days, the numbers were as follows: 215 donors on day two, 197 on day three, 50 on day four, and 15 on day five. In total, 849 voluntary donors were recruited within five days (Table 1), a figure equivalent to the average recruitment over eight weeks during non-disaster periods. However, not all donors met the eligibility criteria. Of the 849 individuals who presented to donate blood, 278 (32.7%) were deferred due to medical reasons. A notable 65% of those deferred were first-time donors.

The LSBTS donor registration form, administered to all 849 participants, provided valuable insights into the channels through which donors learned about the emergency blood drive. A majority, 598 donors (70.4%), cited LSBTS's Twitter campaign as their primary source of information. An additional 124 donors (14.6%) were informed by friends or staff from the Lagos State Ministry of Health, 96 donors (11.3%) heard about the drive through radio and television, and 31 donors (3.7%) became aware through newspapers (Figure 1).

Table 1: LSBTS Twitter interactions, donors' recruitment, deferrals and blood units donated.

Day	Twitter views	Twitter retweets	Twitter likes	Blood donors recruited	Deferrals	Blood units donated
1	150,400	2909	1271	372	116	256
2	231,800	3493	1811	215	76	139
3	257,100	3670	1867	197	65	132
4	289,600	3665	1900	50	14	36
5	296,446	3966	1953	15	7	8
Total				849	278	571

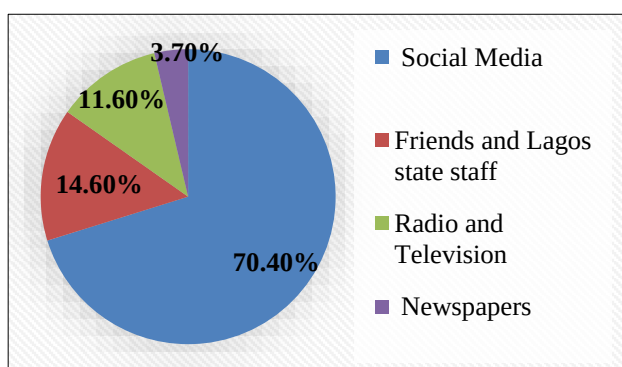


Figure 1: Channels through which voluntary blood donors learned about the LSBTS blood donation drive during a mass casualty event.

DISCUSSION

Disasters, particularly mass casualty events, present complex challenges for blood services as they typically

cause an abrupt and significant increase in blood demand, often exceeding the available reserves. The Lagos State disaster following the train and bus collision exemplifies these challenges, highlighting both the urgent need for blood supplies and the importance of effective response mechanisms. The rapid and well-coordinated efforts by the LSBTS offer valuable insights into disaster preparedness and the innovative use of social media to address public health needs during emergencies.

Effective disaster preparedness for blood services requires a structured response plan that includes resource assessment, staff readiness and strong communication with healthcare facilities and emergency agencies. Research consistently emphasizes the necessity of these components in ensuring rapid and effective mobilization during crises.⁸ The LSBTS response demonstrated these principles through actions such as blood stock assessment, staff mobilization and coordination with LASUTH and sister organisations. These foundational steps allowed LSBTS to quickly identify gaps, such as the limited supply of O-type blood and implement strategies to address them.

The particular demand for O-negative and O-positive blood types, which are universally transfusable, brings to fore, the critical importance of maintaining sufficient reserves of these types as part of disaster preparedness.⁹ The 34 units of O-type blood available at the onset of the Lagos incident were inadequate, necessitating rapid donor mobilization. This highlights the need for pre-emptive measures, such as stockpiling critical blood types, as part of broader disaster readiness efforts.

The impact of the social media campaign on donor turnout was both immediate and substantial. The LSBTS response demonstrated the transformative potential of social media in public health communication, particularly during emergencies. The agency's strategic use of Twitter played a central role in raising awareness and mobilizing donors. Empathetic and action-driven messages, such as "blood donation emergency!" and "please save lives by donating blood," captured the urgency of the situation and resonated strongly with the public, generating an unprecedented level of engagement. Within 24 hours, the campaign achieved over 150,000 views and 2,909 retweets and by the fifth day, the posts had reached nearly 300 thousand views. These statistics underscore the immediate resonance of the campaign's messaging with the public. As the campaign progressed, engagement levels continued to rise. These results also align with other research findings that emphasize the effectiveness of empathetic messaging combined with clear calls to action in driving community participation during crises.¹⁰ The campaign's success exemplifies the value of integrating social media into emergency response strategies for blood banks. Thus, social media should be considered a core component of disaster response strategies, with pre-established protocols for launching campaigns quickly and effectively during emergencies. Furthermore, the LSBTS donor registration form, administered to all 849 recruited donors, provided valuable insights into the channels through which individuals learned about the blood donation campaign. About 70.4% of donors attributed their awareness to the LSBTS Twitter campaign, showcasing the platform's central role in driving participation. Similar studies have demonstrated how social media platforms can quickly disseminate information, build community trust and mobilize public support during disasters.^{3,11} The experience of LSBTS suggests that social media campaigns could serve not only as immediate response tools but also as platforms for sustained donor engagement and education in Nigeria. In addition, by addressing cultural fears and misconceptions about blood donation, using social media, such campaigns have the potential to foster a more consistent and reliable donor base over time.⁶

Another critical element of LSBTS's disaster response was the expansion of blood donation access points. Collaborating with NGOs, community leaders, youth groups and religious bodies, the agency established three additional collection sites and set up a mobile blood donation camp at LASUTH. This approach significantly reduced logistical barriers, such as travel distances and wait times, thereby optimizing donor recruitment.

Research supports the effectiveness of increasing blood collection points, particularly in densely populated areas, to improve donor turnout.¹² By making donation sites more accessible, LSBTS was able to recruit 849 donors within five days, an output equivalent to eight weeks of routine collection. These results highlight the importance of scalable and flexible resources within blood services for effective disaster response. The collaboration with community-based organizations also aligns with findings that partnerships with local groups can enhance blood donation outcomes, especially during crises.¹³ Such partnerships can help build trust and mobilize community networks, further strengthening disaster response efforts.

The donor recruitment rate during the post-disaster period far exceeded routine levels. While the WHO recommends that 1–2% of the population should donate blood annually to meet basic needs, Lagos State falls short of this benchmark.¹ However, during the five-day response period, LSBTS recruited an average of 169 donors per day, driven largely by the social media campaign and expanded access. Previous studies reveal that donors are more likely to respond to urgent, time-sensitive appeals that emphasize a collective need for community participation in saving lives.¹⁴ Thus, these real-time campaigns amplified donor recruitment efforts, enabling the LSBTS to meet immediate needs despite longstanding systemic constraints. However, despite this success, the donor deferral rate of 32.7% posed a challenge. Deferrals, which were primarily among first-time donors (65%), are often higher during crisis-driven donations due to strict screening criteria designed to ensure donor safety and blood quality.¹⁵ Donor deferral is initiated either by the blood centre after obtaining information from the prospective donors or by the donor through self-deferral.¹⁶ Both types of deferral occur because of the belief that a donor's behaviour, exposures, or history may represent an increased risk to the recipient's or the donor's safety.¹⁶ Common reasons for deferral include medical ineligibility, recent illness, or lack of awareness about eligibility criteria. To address this issue, future campaigns could include pre-donation education and accessible eligibility information to help potential donors self-assess their suitability. This approach would not only reduce deferral rates but also improve the efficiency of emergency response efforts by focusing resources on eligible donors. Besides from the need for pre-donation education to improve eligibility rates, this incidence also shows the potential for social media campaigns to expand the donor base beyond regular blood donors. This is because, the high deferral rate among first time donors (65%) indicates the campaign's effectiveness in attracting new participants, representing a significant achievement.

The fluctuation in daily donor rates over the five days provides important insights for future disaster response activities. The initial surge in donor turnout, with 372 individuals on the first day, reflects the strong initial impact of the campaign and the public's emotional response to the crisis. However, subsequent decline in donor turnout may be attributed to factors such as donor

fatigue, waning emotional impact and competing personal priorities. Understanding these patterns can help inform strategies to sustain donor engagement throughout an emergency. Interventions such as staggered messaging campaigns, sharing updates through stories and videos, highlighting the impact of blood drives and showcasing how donations are utilized can effectively sustain public interest and encourage participation.¹⁷ These initiatives can further enhance the success of LSBTS's disaster response, ultimately strengthening blood services in Lagos State.

CONCLUSION

The Lagos State train-bus collision demonstrates the critical challenges faced by blood services in responding to mass casualty events, where the demand for blood rapidly exceeds available reserves. The value of having a structured plan in place highlights the LSBTS's ability to adapt swiftly. Thus, robust response protocols, staff mobilization, resource assessment, social media mobilization, donation site accessibility, collaboration with emergency agencies and sister organizations as well as community partnership helped to increase blood donation rapidly.

More importantly, the strategic use of social media, particularly Twitter, proved transformative, demonstrating its power as a public health communication tool, not only in emergency campaigns but also routine communication. It is therefore necessary for blood services to maintain an active and engaging online presence. Thus, strengthening emergency preparedness in blood services and effective public communication remains crucial for timely, life-saving interventions in Nigeria and similar regions globally.

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REFERENCES

- World Health Organization. Blood safety and availability. 2011. Available at: <https://www.who.int/> Assessed on 10 October 2024.
- Bates I, Hassall O. Should we neglect or nurture replacement blood donors in sub-Saharan Africa? *Biologicals*. 2010;38(1):65-7.
- Asamoah-Akuoko L, Appiah B, Delaney M, M'baya B, Tagny CT, Bates I. The status of blood supply in sub-Saharan Africa: barriers and health impact. *Lancet*. 2023;402(10398):274-6.
- Ugwu A, Madu A, Anigbogu I. Blood transfusion in sub-Saharan Africa: Historical perspective, clinical drivers of demand and strategies for increasing availability. *Africa Sanguine*. 2021;23(1):14-20.
- Ministry of Health. Lagos State Ministry of Health News. Available at: <https://health.lagosstate.gov.ng/2023/06/06/lagos-targets-200000-units-of-blood-from-voluntary-donors/>. Assessed on 10 October 2024.
- Olaiya MA, Alakija W, Ajala A, Olatunji RO. Knowledge, attitudes, beliefs and motivations towards blood donations among blood donors in Lagos, Nigeria. *Transfus Med*. 2004;14(1):13-7.
- Doughty H, Green L. Transfusion support during mass casualty events. *Br J Anaesth*. 2022;128(2):e75-e79.
- Schmidt PJ. Blood and disaster - supply and demand. *N Engl J Med*. 2002;346(8):617-20.
- Chowdhury R, Williams BA, Williams S, Casey J. Quality improvement review of O positive blood in emergency transfusion. *Transfusion*. 2023;63(10):1841-8.
- Reuter C, Kaufhold M-A. Fifteen years of social media in emergencies: A retrospective review and future directions for crisis Informatics. *JCCM*. 2017;26(09):1-17.
- Abbasi RA, Maqbool O, Mushtaq M, Aljohani NR, Daud A, Alowibdi JS, et al. Saving lives using social media: Analysis of the role of twitter for personal blood donation requests and dissemination. *Telematics Informat*. 2018;35(4) 892-912.
- Schreiber GB, Schlumpf KS, Glynn SA, Wright DJ, Tu Y, King MR, et al. Convenience, the bane of our existence, and other barriers to donating. *Transfusion*. 2006;46(4):545-53.
- Ottong JG, Asuquo EEJ, Olaniran NS, Duke FD, Abia RP. Community mobilization for blood donation, Cross River State, Nigeria. *Int J Gynaecol Obstet*. 1997;59(2):S119-S125..
- Zanin TZ, Hersey DP, Cone DC, Agrawal P. Tapping into a vital resource: Understanding the motivators and barriers to blood donation in Sub-Saharan Africa. *Afr J Emerg Med*. 2016;6(2):70-9.
- de Kort W, Prinsze F, Nuboe G, Twisk J, Merz EM. Deferral rate variability in blood donor eligibility assessment. *Transfusion*. 2019;59(1):242-9.
- Gonçalez TT, Sabino EC, Schlumpf KS, Wright DJ, Mendrone A, Lopes M, et al. Analysis of donor deferral at three blood centers in Brazil. *Transfusion*. 2013;53(3):531-8.
- World Health Organization. Blood safety and availability. WHO Guidelines. 2017. Available at: <https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability>. Assessed on 10 October 2024.

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