



HEALTH TECHNOLOGY AND COMMUNICATION SYNERGY FOR COMMUNITY WELL-BEING IN TIMOR LESTE

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Abstract

This international community service program aims to improve community welfare through the synergy of health technology and effective communication strategies in Timor Leste. The program was motivated by limited access to health services, low health literacy, and contextual challenges in health communication within the community. The implementation methods included health education, training on the use of simple health technologies, community mentoring, and strengthening culturally based health communication. The activities were conducted collaboratively by involving local health workers, community members, students, and lecturers as part of international cooperation. The results indicate an improvement in community understanding of basic health practices, more optimal use of health technology, and increased active participation in maintaining personal and community health. In addition, the establishment of international collaboration networks supported the exchange of knowledge and best practices. The evaluation shows that an integrative and participatory approach was effective in supporting program sustainability, despite challenges related to infrastructure limitations and digital literacy. Overall, this community service program contributes significantly to enhancing health literacy and community welfare and can serve as a model for international community engagement based on health technology and communication.

Keywords: Health technology, health communication, international community service community welfare.

Abstrak

Pengabdian masyarakat internasional ini bertujuan untuk meningkatkan kesejahteraan masyarakat melalui sinergi antara teknologi kesehatan dan strategi komunikasi yang efektif di Timor leste. Program ini dilatarbelakangi oleh keterbatasan akses layanan kesehatan, rendahnya literasi kesehatan, dan tantangan komunikasi kesehatan yang kontekstual di masyarakat. Metode pelaksanaan meliputi edukasi kesehatan, pelatihan pemanfaatan teknologi kesehatan sederhana, pendampingan masyarakat dan penguatan komunikasi kesehatan berbasis budaya lokal. Kegiatan ini dilaksanakan secara kolaboratif dengan melibatkan tenaga kesehatan lokal, masyarakat, mahasiswa, dan dosen sebagai bentuk kerja sama lintas negara. Hasil pengabdian menunjukkan adanya peningkatan pemahaman masyarakat terhadap praktik kesehatan dasar, pemanfaatan teknologi kesehatan yang lebih optimal, dan peningkatan partisipasi aktif masyarakat dalam menjaga kesehatan. Selain itu, tetrbangunnya jejaring



kerja sama internasional menjadi nilai tambah dalam pertukaran pengetahuan dan praktik baik. Evaluasi kegiatan menunjukkan bahwa pendekatan integrative dan partisipatif efektif dalam mendukung keberlanjutan program, meskipun masih terdapat tantangan berupa keterbatasan infrastruktur dan nliterasi digital. Secara keseluruhan, pengabdian ini memberikan kontribusi nyata dalam peningkatan literasi kesehatan dan kesejahteraan masyarakat serta dapat dijadikan model pengabdian masyarakat internasional berbasis teknologi dan komunikasi.

Kata Kunci: Teknologi kesehatan, komunikasi kesehatan, pengabdian masyarakat internasional, kesejahteraan masyarakat.

1. INTRODUCTION

The development of health and communication technologies has brought fundamental changes to the way healthcare services are delivered and how interactions occur between service providers and the community (Wijaya et al., 2025). Information and Communication Technology (ICT) is no longer limited to supporting internal operations within healthcare facilities but has evolved into a strategic tool for improving access, quality, and effectiveness of healthcare services for the wider population (Wolf et al., 2025). The utilization of health technologies such as telemedicine, mobile health applications, and integrated health information systems can address various geographical, temporal, and resource-related barriers commonly encountered in conventional healthcare services (Rosari et al., 2023). This technological support is expected to replace manual processes that have long been a major constraint in patient data management and healthcare service delivery. The integration of health technology with effective communication strategies has become an urgent necessity in enhancing community well-being, particularly in developing countries such as Timor-Leste. Limited access to healthcare services, uneven distribution of medical personnel, and geographical challenges can be mitigated through the implementation of digital health technologies (e-health and m-health) supported by community-based health communication (WHO, 2016).

In addition, other innovations in the form of digital platforms for the surveillance of infectious diseases such as tuberculosis (TB), HIV, and malaria demonstrate that digital technology plays a crucial role in accelerating real-time disease detection, reporting, and response to public health needs (Sutarno, 2019). These systems not only assist healthcare workers in collecting data efficiently but also strengthen evidence-based decision-making to enable more targeted and effective health interventions (Domingos et al., 2025).

The readiness of healthcare workers to utilize digital technology is also a critical factor in the successful implementation of such technologies. Studies in Timor-Leste indicate that the majority of healthcare workers already use mobile phones, computers, and internet-based applications as part of their professional communication activities; however, there remains a need to enhance digital competencies to ensure the optimal use of health technologies in clinical services and community communication (UNICEF Timor-Leste, 2024).

The synergy between digital health technology and health communication involves not only technical aspects but also the empowerment of communication through the delivery of



accurate, effective, and widely accessible health information (WHO Timor-Leste, 2023). Digital health communication expands the reach of information and education to communities, supports public understanding of health information, and encourages proactive adoption of healthier behaviors. Therefore, collaboration between technology and communication not only provides technical solutions but also strengthens community engagement in maintaining personal and public health (Muluk Timor, 2014).

However, challenges such as limited digital infrastructure, varying levels of digital literacy among communities, and the ongoing need for training for healthcare workers remain critical issues that must be addressed (Subianto et al., 2025). The synergy between health technology innovation and communication enables improvements in public health literacy, strengthening of referral systems, and more accurate data-driven decision-making, thereby contributing to enhanced quality of life and the achievement of sustainable development goals. This collaborative approach is also aligned with global efforts to strengthen inclusive, sustainable, and community-oriented health systems (World Bank, 2021).

Through this community service initiative, it is expected that communities, university students, and school students in Timor-Leste will gain a better understanding of and be able to optimally utilize health and communication technologies to improve their overall health and well-being.



Gambar 1. Kegiatan di ICS Timor Leste

2. METHOD OF IMPLEMENTATION

This community service program is implemented through a cross-border collaborative approach between Politeknik Indonusa Surakarta and the Instituto de Ciências da Saúde (ICS) in Timor-Leste by integrating community-based health technologies. The implementation method consists of four main stages:

- ✓ Joint coordination and planning
- ✓ Needs assessment and capacity building
- ✓ Implementation of collaborative programs
- ✓ Evaluation and dissemination of results

The coordination stage is conducted through both online and offline meetings between the implementing teams and international partners to establish roles, schedules, and program success indicators. The needs assessment is carried out using a participatory approach



involving lecturers, students, local healthcare workers, community leaders, and local communities to identify priority health issues and assess readiness for technology utilization.

Program implementation includes socialization and training on the use of health technologies, starting from basic applications, as well as the development of multilingual health communication media. Continuous mentoring is provided through cross-border digital platforms to ensure sustainability. Evaluation is conducted collaboratively to measure the program's impact on improving health literacy and the utilization of health technologies, as well as to assess the potential for program replication in strengthening international cooperation networks in the fields of health, communication, and technology.

Socialization Techniques

The socialization techniques applied in this community service program are implemented through an educational, participatory, and culturally based approach, combining face-to-face communication with the use of digital media. Socialization activities are conducted through community workshops, focus group discussions, and direct mentoring, involving lecturers in health, communication, and technology fields, as well as health students, who act as agents of change.

The media utilized include educational visual materials (posters, leaflets, and infographics), digital media (short educational videos, health service messages delivered via WhatsApp, and social media platforms), as well as interactive presentation media based on simple health technologies. All materials are developed contextually, using clear and easily understandable language and, when necessary, adapted to local languages in Timor-Leste to ensure that health messages are effectively received and sustainably adopted by the community.

3. RESULTS AND DISCUSSION

The implementation of this community service program demonstrated an improvement in community understanding and health literacy, particularly regarding the use of simple health technologies for monitoring and preventing health problems. Community members and local healthcare workers were able to utilize digital media as effective tools for health communication, education, and reporting health conditions more efficiently. The synergy between health technology and participatory communication strategies was shown to strengthen community engagement and increase trust in the dissemination of accurate health information.

These findings indicate that a cross-border collaborative approach not only enhances individual and community capacities but also contributes to the sustainable strengthening of local health systems. The discussion highlights that the integration of context-sensitive health technology and communication, supported by international partnerships, is an effective strategy for improving community well-being in regions with limited access to healthcare services.

a. Evaluation Results



The results of the international community service program entitled “Synergy of Health Technology and Communication for Community Well-Being in Timor-Leste” indicate an improvement in the understanding of communities, students, and local healthcare workers regarding the utilization of simple health technologies and effective health communication strategies. The collaboratively implemented education, training, and mentoring activities successfully encouraged the adoption of technologies tailored to local needs, such as basic health monitoring and the delivery of easily understandable health information. Furthermore, the establishment of cross-border collaboration networks strengthened the exchange of knowledge and best practices between the service team and local partners in Timor-Leste.

The evaluation of this activity indicates that the synergistic approach between health technology and participatory communication is highly relevant to the socio-cultural context of the local community. Active community participation emerged as a key supporting factor for the success of the program, although limitations in infrastructure and digital literacy remain as ongoing challenges. Overall, this community service initiative was considered highly effective and sustainable, and it provides important recommendations for the development of future programs, particularly in strengthening human resource capacity and promoting more context-sensitive technology adaptation.

b. Discussion

This community service program confirms that the integration of health technology with contextual communication strategies can enhance community effectiveness in Timor-Leste. The use of simple health technologies tailored to the needs and capacities of the community, supported by participatory and culturally based communication approaches, has proven effective in facilitating the understanding and acceptance of health messages. This synergy not only strengthens community health literacy but also encourages more positive behavioral changes in maintaining personal and community health independently.

On the other hand, the discussion also indicates that the success of the program was strongly influenced by cross-sectoral and cross-border collaboration, particularly between the community service team and local partners. The active involvement of local healthcare workers emerged as a key factor in ensuring program sustainability, although further strengthening of infrastructure and technological literacy remains necessary. Therefore, this community service initiative highlights that similar programs in the future should emphasize continuous mentoring and more flexible technology adaptation to maximize their impact on community well-being.

4. CONCLUSION

The international community service program entitled “Synergy of Health Technology and Communication for Community Well-Being in Timor-Leste” demonstrates that collaboration between the appropriate use of health technologies and communication strategies adapted to the socio-cultural context can enhance health literacy, community participation, and the capacity of local healthcare workers. This synergistic approach not only strengthens health knowledge and promotes positive behavioral change but also fosters sustainable cross-border



collaboration networks. With continued collaborative support and ongoing mentoring, this community service program has the potential to serve as a model for technology- and communication-based community development that can be replicated in other regions with similar characteristics.

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