B-ICON Proceeding

IMPLEMENTATION OF DIGITAL HEALTH TO IMPROVE HEALTH SERVICE ACCESSIBILITY IN BENGKULU CITY IN 2025: AN ANALYSIS OF TELEMEDICINE AND DIGITAL HEALTH TECHNOLOGY

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Abstract

Digital health technologies have emerged as critical solutions to address healthcare accessibility challenges in developing regions. Bengkulu City, as the capital of Bengkulu Province, faces unique healthcare delivery challenges that can be addressed through digital health implementation. This study analyzes the current state and potential of digital health implementation in Bengkulu City in 2025, focusing on telemedicine adoption, healthcare accessibility improvement, and the impact of digital technologies on health service delivery. This research employed a mixed-method approach, combining quantitative analysis of healthcare statistics from BPS-Statistics Indonesia and qualitative assessment of digital health initiatives. Data sources included Bengkulu Province health statistics, national digital health platform usage, and comparative analysis with national trends. The study reveals significant opportunities for digital health expansion in Bengkulu City. With a poverty rate of 12.52% as of September 2024, digital health solutions present viable options for improving healthcare access. The analysis shows potential for telemedicine adoption, particularly given the existing healthcare infrastructure challenges in the region. Digital health implementation in Bengkulu City requires strategic planning considering local socioeconomic factors, digital literacy levels, and healthcare infrastructure. The integration of telemedicine and digital health platforms can significantly improve healthcare accessibility for the city's population.

Keywords: Digital Health, Telemedicine, Bengkulu City, Healthcare Accessibility, Healthcare Technology

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INTRODUCTION

Background

The digital revolution in the healthcare sector has transformed the global healthcare paradigm. Digital health, which encompasses telemedicine, mobile health apps, wearable devices, and health information systems, has proven effective in improving the accessibility and quality of services. However, in Bengkulu City, the implementation of digital health still faces various challenges.

According to Statistics Indonesia (BPS) data (2022), 68.4% of Bengkulu's population uses the internet, lower than the national average (78.2%). This digital divide impacts the accessibility of technology-

based healthcare services. Furthermore, digital literacy remains limited, particularly among the elderly and those in rural areas. This results in suboptimal use of telemedicine, even though the city's infrastructure has begun to support 4G networks.

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Table 1. Bengkulu vs National Health Indicators

Indicator	Bengkulu (%)	National (%)
Obesity (≥18 years)	25,6	21,8
Diabetes (doctor's diagnosis)	2,4	2,0
Hypertension	33,1	34,1
Poverty (2024)	12,52	9,36
Internet Users (2022)	68,4	78,2

Bengkulu City, as the capital of Bengkulu Province, faces unique challenges in providing healthcare services. According to 2025 data from the Statistics Indonesia (BPS), the region has geographic and demographic characteristics that require innovative approaches to healthcare services. With a poverty rate of 12.52% in September 2024, implementing digital health technology is a strategic solution to improve public access to healthcare.

Previous research supports this phenomenon. A study by Suharsono et al. (2021) showed that telemedicine adoption is relatively high in urban areas, but remains low in areas with limited infrastructure. Rachmawati (2022) also found that digital literacy significantly influences the successful implementation of mobile-based health applications in Central Java. In comparison, in Bengkulu City, the telemedicine adoption rate remains below 20% among the general public (BPS Bengkulu, 2024).

To analyze this situation, this article uses several theoretical frameworks. First, the diffusion of innovation theory (Everett Rogers, 2003), which explains how new technologies are adopted by society, from innovators to laggards. Second, Andersen's Behavioral Model of Health Services Use, which emphasizes that access to health services is influenced by predisposing factors, needs, and enabling factors. Third, the WHO Global Strategy on Digital Health (2020–2025) framework, which

emphasizes the importance of governance, human resources, and infrastructure in the digital transformation of the health sector.

Using a theoretical approach and previous research findings, this article attempts to examine in depth the role of digital health in improving access to health services in Bengkulu City, as well as identifying the supporting and inhibiting factors that influence it.

Formulation of the problem

1. What is the current state of digital health implementation in Bengkulu City in 2025?
2. What are the challenges and opportunities in developing telemediv
3. How does digital health impact the accessibility of healthcare services to the Bengkulu community?

Research purposes

General Objective

To analyze the implementation and impact of digital health in improving the accessibility of health services in Bengkulu City in 2025.

Special purpose

1. Evaluate the existing condition of digital health infrastructure in Bengkulu City
2. Identify factors that influence the adoption of telemedicine
3. Analyze the effectiveness of digital health platforms in increasing access to health services
4. Formulate recommendations for sustainable digital health development

The Introduction section should provide a comprehensive overview, covering the study's background, problem statement, objectives, and benefits. It is essential to describe the current situation and establish the significance of the research by contextualizing the problem on a global, regional, national, and local scale. Discuss existing programs, interventions, policies, and the findings of previous studies to demonstrate the current state of knowledge. Finally, articulate the clear rationale for conducting this research and present the specific research questions or hypotheses that your study aims to address.

METHODS

RESEARCH METHODOLOGY

This study used a mixed-methods approach with a descriptive analytical design to analyze digital health implementation in Bengkulu City. A combination of quantitative and qualitative analysis was chosen to provide a comprehensive overview of the state of digital health in the study are. Primary

Data: Digital health technology adoption survey**,** In-depth interviews with health stakeholders**,** and Focus Group Discussion with health service providers**.** Secondary Data: Statistics of Bengkulu Province 2025 from BPS, Health facility data per district/city. Disease case reports by type and region 2024, and Poverty data and socio-economic indicators. Data analysis was conducted using a triangulation approach to validate findings from multiple data sources. Descriptive statistical analysis was used for quantitative data, while thematic analysis was applied to qualitative data.

RESULTS AND DISCUSSION

Health Profile of Bengkulu City

Based on 2025 data from the BPS of Bengkulu Province, health infrastructure in Bengkulu City consists of general hospitals, specialized hospitals, community health centers, primary clinics, and integrated health posts (posyandu) spread across various sub-districts.

Data shows that the prevalence of obesity in Bengkulu among residents aged 18 years and older reached 25.6%, higher than the national figure of 21.8%. Furthermore, the prevalence of diabetes mellitus diagnosed by a doctor was 2.4% and hypertension was 33.1% (Riskesdas, 2018). From a social perspective, the poverty rate in Bengkulu City remained at 12.52% in 2024, higher than the national average of 9.36% (BPS, 2025).

This situation illustrates the high demand for technology-based healthcare services. According to Andersen's Behavioral Model, predisposing factors (age, education), need factors (metabolic disease), and supporting factors (internet access, healthcare facilities) all influence the use of digital health services.

Table 2. Health Facilities in Bengkulu City (2025)

Facility Type	Amount
General Hospital	5
Special Hospital	2
Health Center	20
Primary Clinic	35
Posyandu	350

Current State of Digital Health in Bengkulu City

Telemedicine Adoption

Telemedicine implementation in Bengkulu City remains low. A 2024 BPS survey showed that only 15% of the general public had ever used telemedicine services. Adoption was higher among students/young professionals (42%), but very low among the elderly (8%).
This aligns with the diffusion of innovation theory (Rogers, 2003**),** where younger generations tend to be early adopters, while older generations are laggards in adopting innovation. Rachmawati's (2022) research in Central Java also showed that digital literacy levels are directly proportional to the use of health apps. This comparison confirms that digital literacy is a major barrier in Bengkulu.

Telemedicine implementation in Bengkulu City is still in its development stage. Although national platforms like Halodoc and Alodokter are available, local penetration remains limited by the following factors: Limited internet infrastructure in some**,** Varying levels of digital literacy**,** and Public preference for face-to-face consultations

Tabel **3.** Telemedicine Utilization Level in Bengkulu City (2024)

Community Groups	Percentage (%)
Students/Young Professionals	42
Informal sector workers	25
Elderly	8
General public	15
Health workers	10

Digital Health Infrastructure

Digital health infrastructure in Bengkulu City includes:

- Hospital information system (SIMRS) in major health facilities
- Mobile health application for basic health monitoring
- Telemedicine platform integrated with the national health system

Challenges of Digital Health Implementation

Digital Divide

The digital divide is a major challenge, with people with low levels of education and economic status having limited access to digital health technologies. With a poverty rate of 12.52%, some Bengkulu residents face financial barriers to accessing digital technology.

Health Digital Literacy

The level of digital health literacy in Bengkulu varies, affecting the effectiveness of digital health platform adoption. Education and training are key to successful implementation.

Digital Health Development Opportunities

Despite still facing various challenges, Bengkulu City has significant opportunities to develop digital health as part of its healthcare transformation. Some of these opportunities include:

1. Growth in Internet and Smartphone Users. Statistics Indonesia (BPS) data (2022) shows that 68.4% of Bengkulu's population uses the internet, with over 70% owning smartphones. This figure demonstrates the significant potential for the use of mobile health (mHealth) applications, wearable device-based health monitoring systems, and telemedicine services.
2. National Policy for Digital Transformation of Health. The Indonesian Ministry of Health, through the SATUSEHAT program, targets the integration of electronic medical records and health data interoperability across all healthcare facilities by 2025. This provides a policy framework that supports the acceleration of digital health adoption in Bengkulu.
3. Availability of Human Resources for Health. With the existence of the Bengkulu Ministry of Health Polytechnic of Health and several health universities, there is potential for human resources to be trained as digital health workers (digital health workforce). They can become agents of change in expanding digital health literacy in the community.
4. Support for Big Data and Artificial Intelligence (AI) Technology. The use of big data in health information systems enables prediction of trends in non-communicable diseases (such as diabetes and hypertension). Meanwhile, AI can be used in decision support systems to assist healthcare workers in early diagnosis.
5. Collaboration with Digital Health Startups. Bengkulu can capitalize on the momentum of the development of national health startups. Collaboration between local governments, hospitals, and technology startups will accelerate innovation in digital healthcare services.

These opportunities strengthen the argument that with the right strategy, Bengkulu can become a model for digital health development in Sumatra. However, success remains highly dependent on infrastructure readiness, public digital literacy, and consistent policy support.

Integration with the National Health System

Bengkulu City has a significant opportunity to integrate local digital health systems with national platforms, improving referral efficiency and continuity of care. Integrating regional digital systems with the national health system is a key step to ensure synergy, security, and sustainability of data, referrals, and digital services. For Bengkulu City, key considerations include technical aspects, governance, and regulations.

Local Specific Service Development

Analysis of local disease patterns demonstrates the potential for developing digital health applications tailored to Bengkulu's specific epidemiological needs, such as monitoring tropical diseases and climate-related health conditions.

The Impact of Digital Health on Service Accessibility

Increased Range of Services

The implementation of telemedicine has shown potential to increase the reach of health services, especially for people in remote areas or with limited mobility.

Cost and Time Efficiency

The digital health platform reduces transportation costs and patient waiting times, important factors given Bengkulu's geographic and economic conditions.

CONCLUSION

Conclusion

1. Current State: The implementation of digital health in Bengkulu City in 2025 is still in the development stage, with limited adoption of telemedicine but showing a positive trend.
2. Main Challenges: The digital divide, varying digital health literacy, and limited infrastructure are the main obstacles to implementing digital health.
3. Positive Impact: Digital health shows significant potential in increasing the accessibility of healthcare services, particularly for populations with geographic and economic limitations.
4. Strategic Opportunities: Integration with national systems and the development of locally specific solutions offer significant opportunities for digital health advancement in Bengkulu.

Recommendation

Short Term Recommendations

1. Infrastructure Improvement: Investment in internet infrastructure and information technology in healthcare facilities
2. Digital Literacy Program: Implementation of digital health literacy education programs for the community and health workers
3. Pilot Project: Launch of a telemedicine pilot project for primary healthcare services

Medium Term Recommendations

1. **System Integration:** Development of an integrated system between local health facilities and the national digital health platform

2. **Capacity Building:** Comprehensive training for healthcare workers in the use of digital health technology
3. **Public-Private Partnership:** Collaboration with technology providers to develop sustainable digital health solutions

Long Term Recommendations

1. **Ecosystem Development:** Development of a comprehensive digital health ecosystem that includes prevention, treatment, and monitoring
2. **Research and Innovation:** Establishment of a digital health research center to develop innovations according to local needs
3. **Policy Framework:** Development of regulations and policies that support the implementation of sustainable digital health

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