

Research Article

# Improving Social Rehabilitation Services For Physical Disabilities Through Technology and Family Involvement At East Java Provincial Social Service

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**Abstract:** This study investigates strategies for improving social rehabilitation services for people with physical disabilities through technology-based approaches and family involvement at UPT Social Rehabilitation Bina Laras Pasuruan, East Java. Employing a qualitative case study design, data were collected through in-depth interviews, focus group discussions, observation, and documentation with rehabilitation staff, persons with disabilities, family members, and technology specialists. Findings reveal that integrating digital technologies—including mobile health applications, telemedicine platforms, and assistive devices—significantly enhances service accessibility and monitoring capabilities. Structured family involvement programs, encompassing psychoeducation sessions, home-based care training, and support groups, demonstrate substantial improvements in rehabilitation outcomes. Critical success factors include adequate technological infrastructure, staff digital literacy, family commitment, and inter-agency coordination. Challenges include the digital divide, resistance to technological adoption, and sustainability concerns. The research concludes that a hybrid model combining technology-enabled services with intensive family participation offers the most promising approach and recommends policy frameworks that institutionalise these innovations while ensuring equitable access across diverse beneficiary populations.

**Keywords:** Digital Health; Disability Services; Family Involvement; Service Quality Improvement; Social Rehabilitation.

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## 1. Introduction

The quality of social rehabilitation services for persons with disabilities remains a critical concern in developing countries, where resource constraints and systemic challenges often impede effective service delivery. According to the World Health Organisation (WHO, 2022), approximately 1.3 billion people globally experience significant disability, representing 16% of the world's population. In Indonesia, the Ministry of Social Affairs reports approximately 22.5 million persons with disabilities, constituting 8.5% of the national population (Ministry of Social Affairs, 2023). These statistics underscore the urgent need for innovative approaches to enhance rehabilitation service quality and accessibility.

The digital transformation sweeping across the healthcare and social services sectors presents unprecedented opportunities for improving disability rehabilitation programs (Meskó et al., 2017). Technology-based approaches, including mobile health (mHealth) applications, telemedicine platforms, electronic health records, and assistive technology devices, have demonstrated significant potential to enhance service delivery efficiency, expand geographic reach, and improve beneficiary outcomes (Brennan et al., 2020). The COVID-19 pandemic accelerated this digital transformation, compelling rehabilitation centres worldwide to adopt remote service delivery modalities and digital monitoring systems (Tenforde et al., 2020).

Simultaneously, extensive research has established the critical role of family involvement in rehabilitation success. Family members serve as primary caregivers, emotional support providers, and rehabilitation partners, significantly influencing recovery trajectories (Creasy et al., 2015). Studies consistently demonstrate that active family participation in rehabilitation processes leads to improved functional outcomes, enhanced psychosocial adjustment, and better long-term maintenance of rehabilitation gains (Foster et al., 2019). However, many rehabilitation programs fail to integrate family involvement into their service delivery frameworks systematically.

Indonesia's legal framework for disability rights, established through Law Number 8 of 2016 concerning Persons with Disabilities, mandates comprehensive rehabilitation services encompassing medical, social, vocational, and educational dimensions (Republic of Indonesia, 2016). The law emphasises accessibility, participation, and inclusion as fundamental principles guiding disability service provision. Furthermore, Presidential Regulation Number 67 of 2020 concerning Disability Affairs underscores the government's commitment to improving service quality through innovation and cross-sectoral collaboration (Republic of Indonesia, 2020).

UPT Social Rehabilitation Bina Laras Pasuruan, operating under the East Java Provincial Social Service, is a significant case for examining strategies to improve the quality of rehabilitation services. The facility serves approximately 255 beneficiaries with mental disabilities, providing comprehensive rehabilitation services including psychosocial therapy, vocational training, and community reintegration support (East Java Provincial Social Service, 2023). Recent institutional initiatives have begun exploring technology integration and enhanced family participation as strategies to improve service quality.

Despite growing recognition of technology's potential and the importance of family involvement in rehabilitation contexts, empirical research examining their combined implementation in Indonesian social rehabilitation settings remains limited. Previous studies have primarily focused on either technological innovations or family engagement separately, without adequately exploring synergistic approaches that integrate both elements (Hastuti et al., 2020; Nugraha et al., 2021). This gap in the literature motivates the present study's comprehensive examination of how technology-based approaches and family involvement can jointly enhance the quality of rehabilitation services.

This research aims to investigate strategies to improve the quality of social rehabilitation services by integrating technology-based approaches and family involvement at UPT Social Rehabilitation Bina Laras Pasuruan. Specifically, the study seeks to: (1) analyse current technology adoption practices and their impacts on service delivery; (2) examine family involvement mechanisms and their contributions to rehabilitation outcomes; (3) identify success factors and challenges in implementing integrated approaches; and (4) develop

recommendations for policy and practice. The findings advance knowledge of disability rehabilitation innovation while providing practical guidance for rehabilitation service providers seeking to enhance service quality.

## **2. Literature Review**

### **Service Quality in Social Rehabilitation**

Service quality in social rehabilitation contexts encompasses multiple dimensions, including accessibility, effectiveness, efficiency, equity, patient-centeredness, and safety (Donabedian, 2005). Parasuraman et al.'s (1988) SERVQUAL model, adapted for healthcare and social service settings, identifies five quality dimensions: tangibles, reliability, responsiveness, assurance, and empathy. In rehabilitation contexts, service quality additionally involves therapeutic effectiveness, functional improvement, and successful community reintegration (Wade, 2020).

Contemporary approaches to rehabilitation quality emphasise person-centred care that prioritises individual preferences, needs, and values in service design and delivery (Bright et al., 2015). The International Classification of Functioning, Disability and Health (ICF) framework provides a comprehensive model for understanding disability and rehabilitation outcomes, incorporating body functions, activities, participation, and environmental factors (WHO, 2001). Quality rehabilitation services address all these dimensions while promoting maximum functional independence and social inclusion.

### **Technology-Based Approaches in Rehabilitation**

The application of digital technologies in rehabilitation has evolved significantly, encompassing diverse modalities including telerehabilitation, mobile health applications, wearable devices, virtual reality, and artificial intelligence-assisted interventions (Laver et al., 2020). Telerehabilitation, defined as the delivery of rehabilitation services via telecommunications technology, has demonstrated effectiveness comparable to in-person services for various conditions while offering advantages in accessibility and cost-efficiency (Cottrell et al., 2017).

Mobile health applications enable continuous monitoring, medication reminders, therapeutic exercise guidance, and communication between service providers and beneficiaries (Cason, 2014). Electronic health record systems improve care coordination, facilitate data-driven decision making, and support quality monitoring (Kruse et al., 2018). Assistive technology devices enhance functional capabilities and promote independence among persons with disabilities (Cook & Polgar, 2015). The successful implementation of these technologies requires adequate infrastructure, staff training, and user acceptance strategies.

Research in developing country contexts has identified unique challenges and opportunities for technology adoption in rehabilitation settings. Digital divide concerns, including limited internet connectivity, device availability, and digital literacy, require targeted interventions to ensure equitable access (Hossain & Ahmed, 2021). However, mobile phone penetration rates exceeding 130% in Indonesia suggest significant potential for mobile-based rehabilitation innovations (World Bank, 2023).

## Family Involvement in Rehabilitation

Family involvement in rehabilitation encompasses multiple roles, including caregiving, emotional support, advocacy, and active participation in therapeutic processes (Bamm & Rosenbaum, 2008). Family systems theory conceptualises disability as affecting the entire family unit, necessitating interventions that address family dynamics, coping mechanisms, and support needs (Turnbull et al., 2015). Family-centred care approaches position family members as essential partners in rehabilitation planning, implementation, and evaluation.

Empirical evidence consistently supports the positive impact of family involvement on rehabilitation outcomes. Studies demonstrate that family participation in therapy sessions improves skill generalisation to home environments (King et al., 2015). Psychoeducation programs equipping families with knowledge about disability conditions and care techniques enhance caregiver competence and reduce burden (Cheng et al., 2018). Family support groups provide emotional support and practical guidance that sustain long-term engagement in rehabilitation (Viana et al., 2020).

In Indonesian cultural contexts, family structures and values significantly influence disability care patterns. Extended family networks often provide substantial caregiving support, while cultural stigma may affect family willingness to engage openly with rehabilitation services (Adioetomo et al., 2014). Effective family involvement strategies must be culturally responsive, addressing local norms, beliefs, and family dynamics while promoting progressive approaches to disability inclusion (Widinarsih, 2019).

## Integrated Approaches and Theoretical Framework

This study adopts an integrated theoretical framework combining service quality management theory, the technology acceptance model (TAM), and the family systems perspective. The service quality dimension draws from Donabedian's (2005) structure-process-outcome model, examining how technological and familial inputs influence service delivery processes and rehabilitation outcomes. TAM provides analytical tools for understanding the factors that affect technology adoption among staff, beneficiaries, and families (Davis, 1989). Family systems theory illuminates the interconnected nature of individual and family functioning in rehabilitation contexts (Bowen, 1978).

The integration of technology-based approaches with family involvement creates synergies that enhance service quality. Technology can facilitate family engagement through remote communication platforms, shared monitoring applications, and educational resources (Cason & Cohn, 2014). Simultaneously, family involvement can support technology adoption by providing user assistance, motivation for engagement, and feedback for system improvement (Lindeman et al., 2020). This integrated approach aligns with ecological models emphasising the importance of environmental and social factors in disability rehabilitation (Bronfenbrenner, 1979).

## 3. Method

This research employs a qualitative case study design to comprehensively examine service quality improvement strategies at UPT Social Rehabilitation Bina Laras Pasuruan. Case study methodology is appropriate for investigating complex contemporary phenomena in real-life contexts, particularly when the boundaries between the phenomenon and its context are

unclear (Yin, 2018). The qualitative approach enables in-depth exploration of stakeholder perspectives, implementation processes, and contextual factors influencing outcomes.

The research was conducted at UPT Social Rehabilitation Bina Laras Pasuruan, located in Grati District, Pasuruan Regency, East Java Province, Indonesia. The facility, operated by the East Java Provincial Social Service, provides rehabilitation services for individuals with mental disabilities. Data collection occurred between March and August 2024, encompassing multiple service cycles and seasonal variations in program implementation.

Data collection employed multiple techniques to ensure a comprehensive understanding and triangulation. In-depth interviews were conducted with 25 key informants, including facility administrators (3), social workers (5), medical personnel (4), technology specialists (2), program beneficiaries (6), and family members (5). Focus group discussions involving staff members (2 groups of 8 participants each) explored collective perspectives on technology adoption and family engagement strategies. Participant observation during service delivery activities, family visits, and technology-mediated sessions provided direct insights into implementation dynamics. Documentation review encompassed policy documents, program reports, monitoring data, and communication records.

**Table 1.** Research Informant Characteristics.

No	Category	Number	Method	Code
1	Facility Administrators	3	Interview	ADM1-ADM3
2	Social Workers	5	Interview, FGD	SW1-SW5
3	Medical Personnel	4	Interview, FGD	MED1-MED4
4	Technology Specialists	2	Interview	TECH1-TECH2
5	Program Beneficiaries	6	Interview	BEN1-BEN6
6	Family Members	5	Interview	FAM1-FAM5

*Source: Research Data, 2024*

Data analysis followed thematic analysis procedures as outlined by Braun and Clarke (2006). Interview recordings were transcribed verbatim, and the transcripts were systematically coded using NVivo 12. Initial coding identified discrete meaning units, which were subsequently organised into categories and themes. Themes were reviewed for internal coherence and external distinctiveness, then refined through iterative analysis. Triangulation across data sources, member checking with key informants, and peer debriefing enhanced analytical rigour and trustworthiness (Creswell & Poth, 2018).

## 4. Results and Discussion

### Technology-Based Approaches in Service Delivery

The research findings reveal significant developments in technology integration at UPT Bina Laras Pasuruan. The facility has progressively adopted several technology-based approaches to enhance service delivery, including digital beneficiary management systems, telemedicine consultations, mobile communication platforms, and assistive technology devices. These innovations represent substantive departures from traditional paper-based and face-to-face exclusive service models.

The digital beneficiary management system, implemented in 2022, enables comprehensive tracking of individual rehabilitation progress, medication schedules, therapy attendance, and functional assessments. Staff members reported substantial improvements in documentation efficiency and information accessibility. As one administrator explained:

"Before the digital system, finding a beneficiary's complete history required searching through multiple paper files. Now, all information is available immediately, which helps us make better decisions and coordinate care more effectively" (ADM1). This finding aligns with research demonstrating the benefits of electronic health records in rehabilitation settings (Kruse et al., 2018).

Telemedicine consultations, accelerated by COVID-19 pandemic requirements, have become integrated into regular service provision. Monthly psychiatric consultations now occur via video conferencing for beneficiaries whose conditions do not require in-person examination. Medical personnel described mixed experiences: "Video consultations work well for medication reviews and routine check-ups. However, we still need face-to-face meetings for initial assessments and when there are concerning behavioural changes" (MED2). This observation aligns with the broader literature on telerehabilitation's appropriate applications and limitations (Tenforde et al., 2020).

Mobile communication platforms, particularly WhatsApp groups, facilitate daily communication among staff, with families, and with referring agencies. These platforms enable rapid information sharing, emergency coordination, and ongoing family engagement. Social workers emphasised the transformation in family communication: "Previously, families only received updates during monthly visits or when problems occurred. Now, we regularly share photos, progress updates, and activity schedules on WhatsApp. Families feel more connected and involved" (SW3). This enhanced communication supports theoretical expectations regarding technology's role in strengthening family engagement (Lindeman et al., 2020).

### **Family Involvement Mechanisms**

The facility has developed structured family involvement programs addressing multiple dimensions of family engagement. Key mechanisms include psychoeducation sessions, home-based care training, family support groups, and participation in rehabilitation planning. These initiatives reflect recognition of family members as essential rehabilitation partners rather than passive service recipients.

Psychoeducation sessions, conducted monthly, provide families with knowledge about mental health conditions, treatment approaches, medication management, and strategies for supporting recovery. Family members described significant benefits: "Before joining the psychoeducation sessions, I felt helpless and ashamed about my brother's condition. Now I understand it's an illness that can be managed. I know how to respond when he's having difficulties and how to support his medication compliance" (FAM3). This finding corroborates research demonstrating that psychoeducation positively impacts family coping and caregiving competence (Cheng et al., 2018).

Home-based care training prepares families for eventual beneficiary reintegration by developing practical caregiving skills. Training covers daily care routines, crisis management, communication techniques, and accessing community resources. Staff observed improvements in family readiness: "Families who complete the training program are much more confident about bringing their relatives home. They have realistic expectations and know what support is available" (SW2). The training approach aligns with family-centred

care principles, emphasising competence building and empowerment (Bamm & Rosenbaum, 2008).

Family support groups meet quarterly, providing opportunities for shared experiences, emotional support, and mutual learning among families in similar situations. Participation in support groups was associated with reduced stigma perceptions and enhanced social support networks. One family member reflected: "Meeting other families showed me we're not alone."

**Table 2.** Service Quality Improvement Strategies and Outcomes.

Strategy Type	Specific Interventions	Observed Outcomes
Technology-Based	Digital management system, telemedicine, mobile platforms	Improved efficiency, enhanced coordination, and better accessibility
Family Education	Psychoeducation sessions, care training workshops	Enhanced family knowledge, improved coping skills
Family Support	Support groups, peer counselling	Reduced stigma, stronger social networks
Integrated Approach	Technology-enabled family engagement, remote monitoring	Synergistic benefits, sustained engagement

*Source: Research Data, 2024*

**Success Factors and Enabling Conditions**

Analysis of implementation experiences identified several critical success factors enabling effective technology integration and family involvement. Leadership commitment emerged as a foundational element, with administrators actively championing innovations and allocating resources for their implementation. Staff capacity-building through training programs developed digital competencies and family engagement skills essential to new approaches. An organisational culture that emphasises continuous improvement and beneficiary-centred care fosters receptivity to change (Damschroder et al., 2009).

Adequate technological infrastructure, including reliable internet connectivity, sufficient device availability, and technical support systems, proved essential for sustainable technology adoption. The facility invested in upgrading internet bandwidth and procuring tablets for staff use, addressing infrastructure gaps that initially constrained implementation. External partnerships with technology providers and academic institutions contributed expertise and resources supporting implementation efforts (Greenhalgh et al., 2017).

Family factors, including commitment to participation, geographic accessibility, and available time, influenced the effectiveness of family involvement. Families with greater resources and fewer competing demands demonstrated more consistent engagement. Cultural factors, particularly family values emphasising collective responsibility for member welfare, supported participation in rehabilitation processes. However, stigma and shame associated with mental disability sometimes inhibited open family participation, requiring sensitive engagement approaches (Widinarsih, 2019).

**Challenges and Barriers**

Despite positive developments, implementation encountered significant challenges requiring ongoing attention. Digital divide issues affected both staff and family engagement with technology-based approaches. Some older staff members struggled to adapt to digital systems, while families in rural areas with limited internet access could not fully participate

in technology-enabled communication. These disparities risked creating inequities in service access and quality (Hossain & Ahmed, 2021).

Resource constraints persisted as fundamental challenges affecting both technology sustainability and family program expansion. Budget limitations restricted investment in advanced technologies and sufficient staff positions for family engagement activities. One administrator noted: "We have ambitious plans for expanding our technology systems and family programs, but budget allocations don't match our aspirations. We have to prioritise and sometimes make difficult trade-offs" (ADM2). These resource challenges reflect broader fiscal constraints facing social service institutions in Indonesia (Sumarto et al., 2020).

Resistance to change among some staff and families presented implementation barriers. Staff members accustomed to traditional service models sometimes viewed technology as a burden rather than an efficiency improvement. Some families expressed scepticism about technology-mediated communication, preferring to rely exclusively on face-to-face interactions. Addressing these attitudes required sustained change management efforts that emphasised benefits and provided adequate support for the transition (Nilsen, 2015).

### **Family Involvement Mechanisms**

Based on the research findings, an integrated model for service quality improvement emerges, combining technology-based approaches and family involvement in synergistic ways. Technology serves as both a direct service enhancement mechanism and an enabler of family engagement. Digital platforms facilitate ongoing family communication, remote participation in care planning, and access to educational resources. Simultaneously, family involvement supports technology adoption by providing user assistance, motivating beneficiary engagement, and contributing feedback for system improvement.

This integrated approach aligns with ecological perspectives, emphasising the importance of environmental and social contexts in rehabilitation outcomes (Bronfenbrenner, 1979), by strengthening both technological capabilities and family support systems. Rehabilitation services address multiple levels of the ecological model, enhancing individual functioning while building supportive environments for sustained recovery. The approach also reflects person-centred care principles by expanding options for service access and engagement modalities responsive to personal and family preferences (Bright et al., 2015).

### **5. Conclusion**

This research examined strategies to improve the quality of social rehabilitation services through technology-based approaches and family involvement at UPT Social Rehabilitation Bina Laras Pasuruan. The findings demonstrate that thoughtful integration of digital technologies and structured family participation programs can significantly enhance rehabilitation service delivery, accessibility, and outcomes. Technological innovations, including digital management systems, telemedicine, and mobile communication platforms, have improved efficiency, coordination, and family engagement. Family involvement mechanisms, including psychoeducation, skills training, and support groups, have strengthened family capacity and commitment to rehabilitation.

The identified critical success factors include leadership commitment, staff capacity-building, adequate infrastructure, external partnerships, and a supportive organisational culture. Challenges encountered encompass digital divide issues, resource constraints, and resistance to change among some stakeholders. Addressing these challenges requires sustained attention to equity concerns, continued investment in technology and human resources, and effective change management strategies.

The research contributes an integrated model that combines technology-based approaches and family involvement to improve the quality of rehabilitation services. This model offers practical guidance for rehabilitation facilities seeking to enhance service quality while responding to contemporary demands for technological innovation and family-centred care. The findings inform policy recommendations, including developing national guidelines for technology integration in social rehabilitation services, establishing family involvement standards, investing in digital infrastructure and staff capacity building, and creating mechanisms for sharing innovations across facilities.

Future research should examine long-term outcomes of integrated approaches, comparative effectiveness across different settings and populations, cost-effectiveness analyses, and scalability considerations. Expanding the evidence base through rigorous evaluation will support evidence-informed policy development and practice improvement in disability rehabilitation services. Ultimately, enhancing rehabilitation service quality through innovation and family partnership contributes to fulfilling the rights of persons with disabilities to comprehensive, accessible, and practical rehabilitation support.

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