Exploring Technology Needs to Improve Mental Health Service Coordination

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Article Info	ABSTRACT
	Mental health services in Indonesia face significant challenges in coordination between agencies, including mental hospitals, community health centers (Puskesmas), and private institutions. Lack of data integration, limited communication, and low technology utilization hinder service effectiveness. This study aims to explore the need for technology to improve mental health service coordination and identify solutions that can address these challenges. Using a qualitative descriptive approach, the study involved healthcare workers from mental hospitals, community health centers, and private institutions in the provinces of South Sumatra, Lampung, and Jakarta. The results indicate that the implementation of a technology-based integrated information system, telemedicine applications, and intensive training for healthcare workers are key desired solutions. Furthermore, improving inter-agency communication and providing adequate technological infrastructure are also considered important. These findings align with health information systems theory and technology accessibility theory, which suggest that technology can improve coordination and access to services. Despite limitations in terms of sample size and perspective, this study provides important insights into the application of technology in mental health services in Indonesia and suggests solutions to improve the effectiveness of coordination within the mental health service system.

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1. INTRODUCTION

Mental health is a crucial aspect in improving the quality of life for the community [1], [2]. In Indonesia, the prevalence of mental health disorders continues to show significant figures, both among adults and adolescents [3]. Untreated mental disorders can lead to a reduced quality of life, increased dependence on medical services, and increased social and economic burdens [4]. Therefore, it is crucial for the mental health care system to provide effective and coordinated services across various institutions, both at the clinical and community levels.

However, a major challenge in the mental health care system in Indonesia is the lack of effective coordination between various service providers, such as mental hospitals, community health centers (Puskesmas), private institutions, and social services [5]. Limited communication and integration between agencies often hinders the effective treatment of mental health disorders. In this context, the use of technology can be an effective solution to improve coordination, accelerate the flow of information, and facilitate access to mental health services for the community [6].

Information and communication technology (ICT) has developed rapidly in recent years and can be applied to improve coordination within the mental health care system [7], [8]. The use of digital platforms such as web-based applications, telemedicine, and integrated data management systems can help optimize case management, monitor patient progress, and facilitate collaboration between healthcare professionals at various levels of care [9], [10]. While technology offers significant potential, numerous challenges remain in its implementation, such as limited access in remote areas, lack of training for healthcare professionals, and issues with the protection of patients' personal data.

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Therefore, it is crucial to conduct a needs analysis for effective technology-based mental health service coordination, particularly in clinical and community settings [11]. This study aims to identify factors influencing the need for technology integration within the mental healthcare system and examine the challenges faced by healthcare providers in implementing technology.

2. RESEARCH METHOD

This study employed a qualitative approach, collecting primary data through in-depth interviews and focus group discussions (FGDs). Prior to data collection, researchers coordinated and obtained permits with relevant agencies and invited representatives of healthcare workers from mental hospitals, community health centers, and private institutions in three provinces.

In-depth interviews were conducted with two healthcare worker representatives from each agency in each province to explore experiences, challenges, and obstacles in coordinating mental health services, as well as their perspectives on the use of technology to improve inter-agency coordination. Interview topics included existing communication systems, coordination barriers, and the need for technology integration.

Furthermore, FGDs were conducted involving healthcare worker representatives from various agencies in the three provinces to collectively discuss the potential for technology implementation, challenges to cross-sector coordination, and the need for a mental health service support system.

Data were analyzed using thematic analysis through transcription, coding, and grouping relevant themes, such as inter-agency coordination, communication system barriers, and technology needs. Data validity was maintained through member checking, involving participants to review and confirm the research findings.

3. RESULTS AND DUSCUSSIONS

3.1. Results

Analysis of data from in-depth interviews and Focus Group Discussions (FGD) resulted in two main themes and several sub-themes that describe the problems and needs in coordinating mental health services in three provinces (South Sumatra, Lampung, and DKI Jakarta).

3.1.1. Theme 1. Mental Health Service Coordination Issues

This theme describes the various obstacles faced by healthcare workers in coordinating mental health services across agencies.

a. Subtheme 1. Lack of System Integration Between Agencies
   Health workers reported that mental hospitals, community health centers, and private institutions still operate with their own systems without data integration. This situation results in the inability to access patient history information in an integrated manner and hinders continuity of service, particularly in the referral and follow-up process.

b. Subtheme 2. Limited Communication Between Healthcare Workers
   Coordination between agencies is generally conducted manually via telephone or text messages. This method is considered ineffective and has the potential to lead to miscommunication, especially when there are differences in service hours between healthcare facilities.

c. Subtheme 3. Minimal Utilization of Information Technology
   Most agencies still rely on manual record-keeping and stand-alone information systems. The lack of a shared digital platform makes it difficult for cross-agency collaboration to manage complex and sustainable mental health cases.

d. Subtheme 4. Reliance on Face-to-Face Monitoring
   Monitoring of patient conditions still relies on in-person visits to healthcare facilities. The lack of a remote monitoring system makes it difficult for patients with limited geographic access or mobility to receive follow-up care.

e. Subtheme 5. Challenges in Managing Sensitive Patient Data
   Healthcare workers expressed concerns regarding the security and confidentiality of patient medical data. This situation limits the exchange of information between agencies and impacts the smoothness of clinical decision-making.

f. Subtheme 6. Limited Human Resource Capacity
   Some healthcare workers lack adequate skills in the use of information technology. This lack of training results in suboptimal use of technology in coordinating mental health services.

g. Subtheme 7. Limited Infrastructure and Financing
   Limited technological devices, unstable internet access, and limited budgets are major obstacles, especially in certain regions, in supporting technology-based mental health service coordination.

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3.1.2. Theme 2. Hopes for Strengthening Mental Health Service Coordination

This theme describes the views and hopes of healthcare workers for a more effective and integrated mental health service coordination system.

a. Subtheme 1. Need for an Integrated Information System

Health workers hope for an integrated information system that can connect all mental health service agencies, enable real-time access to patient data, and support the referral process and ongoing follow-up.

b. Subtheme 2. Need for a Digital Referral System and Patient Monitoring

Research participants emphasized the importance of a structured digital referral system and a technology-based patient monitoring system to support remote monitoring of patient conditions.

c. Subtheme 3. Need for Remote Mental Health Services

The development of telemedicine services, including telepsychiatry, is seen as a necessity to improve access to services, especially for patients in areas with limited healthcare facilities.

d. Subtheme 4. Need for Capacity Building for Healthcare Workers

Health workers expressed the need for ongoing training on the use of information technology and digital systems to ensure more effective service coordination.

e. Subtheme 5. The Need for Strengthened Cross-Sector Communication and Collaboration

More structured communication mechanisms, such as regular cross-agency coordination forums, are needed to support collaboration in handling mental health cases.

f. Subtheme 6. The Need for Infrastructure and Financing Support

Research participants highlighted the importance of adequate technological infrastructure and financing support for the sustainable implementation of the mental health service coordination system.

3.2. Discussions

This study aims to identify problems and solutions related to technology-based mental health service coordination in clinical and community settings. Based on the results of research conducted in three provinces (South Sumatra, Lampung, and DKI Jakarta), several key problems related to mental health service coordination were identified, along with a number of proposed solutions to address them. This discussion will compare these findings with previous research and relevant theories to provide broader context on this topic.

3.2.1. Mental Health Service Coordination and Technology Use

One of the main problems identified in this study is the lack of integration between mental health hospitals, community health centers, and private institutions in mental health services. This aligns with findings in research by [12], which showed that a lack of coordination and integration between agencies can hinder the effective treatment of mental health patients. Blockley et., al (2022) also emphasized the importance of an integrated information system that allows real-time data access by all parties involved in patient care [13]. Therefore, one solution anticipated in this study is the implementation of a cloud-based integrated information system, which would enable all agencies to share patient medical data efficiently and securely, thus addressing the issue of limited communication.

The theory underlying this solution can be found in the concept of Health Information Systems (HIS), which focuses on the use of technology to efficiently collect, store, and distribute medical data [14]. According to Kaplan et al. (2014), the implementation of an integrated health information system can improve inter-agency coordination, accelerate decision-making, and improve the quality of patient care. Therefore, the findings of this study, which anticipate the use of a cloud-based integrated information system, align with existing theories regarding the efficiency of information systems in healthcare.

3.2.2. Use of Telemedicine in Mental Health Services

This study also found that telemedicine, or remote consultations, is a promising solution for improving the coordination of mental health services, especially in hard-to-reach areas [15]. This aligns with research, which showed that telehealth is an effective, efficient, and widely accepted solution for improving adolescent mental health access, but it is not a perfect substitute for face-to-face services. Its success depends on technological adaptation, equitable access, and an approach based on adolescent preferences [16]. Park et al. (2019) also found that telepsychiatry, namely psychiatric consultations via video call or messaging apps, can be an effective alternative to address limitations in mental health services.

A relevant theory for this solution is Health Accessibility Theory, which states that technology can increase the accessibility of healthcare services by overcoming geographic and temporal barriers (Haux et al., 2019). In the context of mental healthcare services, telemedicine can enable patients to receive care without having to attend a healthcare facility in person, which in turn can increase the effectiveness and efficiency of services [17].

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3.2.3. Human Resource Training and Technology Competency Development

One solution proposed in this study is the importance of human resource training to improve healthcare workers' competency in using information technology, particularly in the use of health information systems and telemedicine applications [18], [19]. This finding aligns with research by Gagnon et al. (2016), which revealed that a lack of skills in using technology is a major barrier to the implementation of technology systems in healthcare. Furthermore, adequate training regarding data security and patient privacy is also considered crucial to ensure that technology is used effectively and in accordance with existing ethical standards.

According to Parasuraman's (2000) Technology Readiness Theory, an organization's technological readiness is heavily influenced by the ability and knowledge of its human resources to utilize the technology. Therefore, ongoing training is crucial to facilitate the transition to a more digital and integrated system and to ensure that healthcare workers can utilize technology optimally.

3.2.4. Strengthening Inter-Agency Collaboration

Another solution identified in this study is the importance of inter-agency collaboration forums to improve coordination and information sharing regarding patient care [20]. This aligns with findings from research by Pang et al. (2017), which suggested the importance of collaboration between hospitals, community health centers, and private institutions in the management of mental health patients to achieve better outcomes. (Falconer, Kho and Docherty (2018) emphasized that cross-sector collaboration can improve the quality of care and minimize disparities in service access [21].

The underlying theory is Inter-organizational Collaboration Theory, which suggests that collaboration between organizations can increase operational effectiveness and accelerate the achievement of shared goals (Gray, 1989). In the context of mental health services, collaboration between mental hospitals, community health centers, and private institutions can create greater synergy in the care of patients who require attention from various agencies.

3.2.5. Technological Infrastructure and Financing

Providing adequate technological infrastructure, especially in remote areas, is also a desirable solution to improve the coordination of mental health services [6]. This finding aligns with research by Zhang et al. (2020) showed that limited infrastructure is a major obstacle to the implementation of health technology in certain areas. Zhang et al. (2020) revealed that strong infrastructure support is crucial to ensuring the effective use of technology in mental health management.

A relevant theory is the Technology Infrastructure Theory, which states that the quality of infrastructure significantly influences the adoption and implementation of technology in a region Bertot et al. (2012). Therefore, improving technological infrastructure in less developed areas can expand the reach of mental health services and improve the efficiency of inter-agency coordination.

Overall, the findings of this study involving the application of technology in mental health service coordination, such as the use of integrated cloud-based information systems, telemedicine, and increased inter-agency collaboration, align with existing theories and previous research. The application of technology can not only increase the efficiency and effectiveness of mental health service coordination but can also improve accessibility, reduce geographic barriers, and increase patient engagement in the care process. Therefore, implementing the solutions identified in this study is crucial to creating a better, more integrated, and technology-based mental health service system.

This study has several limitations, including a limited sample size, involving only healthcare workers from three provinces, and time and resource constraints that limited the depth of data collection. Furthermore, the study relied solely on the perspectives of healthcare workers, without involving the perspectives of patients or their families. Potential bias in interviews and focus group discussions (FGDs) and challenges in implementing technological solutions in areas with limited infrastructure are also factors that need to be considered. Therefore, further research with a larger, more inclusive sample and a longer period of time will provide more comprehensive results.

4.   CONCLUSION

This study successfully identified key issues related to the coordination of mental health services in Indonesia, such as a lack of integration between agencies, limited communication between healthcare professionals, and minimal use of technology. Some solutions expected to address these issues include the implementation of a technology-based integrated information system, the use of telemedicine applications, and increased training for healthcare professionals in technology use. Furthermore, strengthening collaboration between agencies and providing adequate infrastructure in remote areas is also considered crucial to improving coordination effectiveness. Although this study has limitations in terms of sample size and perspective, the findings provide important insights for future improvements to the mental

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health service system. Further research with a broader scope and involving more stakeholders is expected to strengthen the findings and proposed solutions.

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