

Review**INTEGRATION OF REHABILITATION SERVICES –
OVERVIEW AND PERSPECTIVES****Anita Kovačić Popović¹, Biljana Stojanović^{1,2}, Dejan Miljković¹**¹ Medika College of Vocational Studies in Healthcare, Belgrade, Serbia² Clinic for Rehabilitation "Dr Miroslav Zotović", Belgrade, Serbia**Received:** October 14, 2024; **Revised:** November 22, 2024; **Accepted:** December 2, 2024**Published:** December 5, 2024**DOI:** 10.5937/annnur2-54107**Abstract****Background**

Rehabilitation is a complex process encompassing various aspects of physical, functional, psychological, and psychosocial health. The integrative rehabilitation method combines different clinical and therapeutic models to create an optimal environment for assessing and treating individuals.

Objective

This study aims to provide an overview of integrative approaches in rehabilitation, identify their advantages and challenges, and explore strategies to improve their implementation in healthcare systems.

Materials and Methods

Relevant scientific research on integrative approaches in rehabilitation was analyzed, focusing on studies addressing multidisciplinary teamwork, individualized treatments, and the application of complementary and integrative methods.

Results

Research indicates that integrative approaches significantly improve functionality and quality of life. Key factors for successful implementation include multidisciplinary teamwork and tailoring treatments to individual needs. Challenges in implementation include service fragmentation and a lack of coordination between different levels of healthcare.

Conclusion

Integrative approaches in rehabilitation offer substantial benefits in enhancing functionality and quality of life. Despite challenges in their implementation, particularly in low- and middle-income countries, investments in resources and training can facilitate the broader application of these methods. Further research is needed to optimize these approaches and maximize their benefits.

Keywords: physical and rehabilitation medicine, health care systems, health services**Corresponding Author:** Anita Popović Kovačić, e-mail: anitakovacic987@hotmail.com

Introduction

Rehabilitation is a complex process that encompasses various aspects of patients' physical, psychological, social, and functional health. While traditional rehabilitation approaches have primarily focused on the physical aspects of recovery, advancements in modern medicine and health sciences have highlighted the need for a more holistic approach. This approach integrates biological, psychological, and social factors to achieve comprehensive recovery. The biopsychosocial model, as the dominant framework in contemporary medicine, emphasizes the interdependence of biological factors, patients' psychological responses, and the social context in which rehabilitation occurs.¹ Healthcare systems worldwide face the challenge of implementing integrative methods into everyday practice while ensuring optimal coordination across different levels of care. Multidisciplinary teamwork has become the cornerstone of this approach, offering continuity of care, treatment adaptation to specific needs, and improving healthcare service efficiency. However, the introduction of integrative approaches also presents obstacles, such as service fragmentation, a lack of resources and professional training, and the complexity of incorporating complementary therapies within healthcare systems in low- and middle-income countries.

This paper aims to provide a comprehensive review of existing integrative approaches in rehabilitation, identify their advantages and challenges, and propose strategies for improving their application within healthcare systems. By

analyzing relevant scientific research, this paper will highlight key aspects of multidisciplinary work, the application of individualized treatments, and the integration of complementary methods.

The Importance of the Integrative Approach in Rehabilitation

The integrative approach to rehabilitation combines conventional medical therapies with complementary and alternative methods to ensure comprehensive care tailored to the individual needs of patients. This approach involves the synergy of various disciplines, including medical care, physical therapy, psychological support, occupational therapy, and social rehabilitation. By applying these methods, patients receive not only physical assistance in their recovery but also psychological and social support, which is crucial for holistic recovery and improving quality of life.²

A key aspect of the integrative approach is multidisciplinary teamwork, which enables coordinated delivery of rehabilitation services. Multidisciplinary teams typically include physicians, physiotherapists, occupational therapists, speech therapists, psychologists, social workers, and nutritionists, who collaborate to create individualized treatment plans for patients. This approach provides a holistic understanding of the patient's condition and facilitates better adaptation of treatment to specific needs, ensuring optimal continuity of care.³ The main advantage of multidisciplinary teamwork is its ability to provide comprehensive support for both physical recovery and psychosocial rehabilitation, which contributes to an

improved quality of life and a faster return to daily activities. However, although the multidisciplinary approach is widely recognized as the gold standard in rehabilitation, its implementation faces challenges, particularly in resource-limited countries where a lack of coordination and resources can hinder its effectiveness.⁴

Despite the integrative approach demonstrating significant improvements in patients' functionality and quality of life, its implementation faces several challenges. One major challenge is the fragmentation of services within healthcare systems, which complicates coordination between different sectors of care. In low-income countries, additional obstacles include a lack of financial resources, limited training for healthcare professionals, and insufficient availability of complementary therapies.⁵ Another key issue is the lack of education and certification for complementary therapies among healthcare professionals. Without proper training, these methods may be underestimated or inadequately applied, potentially undermining their benefits for patients. Moreover, greater institutional support is needed, including better infrastructure and policies that promote integrative approaches in rehabilitation.

Integrative medicine emphasizes connecting conventional therapies with evidence-based complementary practices, such as acupuncture, yoga, meditation, massage, and relaxation techniques. These methods are increasingly incorporated into rehabilitation protocols as they contribute to stress reduction, pain relief, psychological stability, and overall patient well-being.⁶ The National Center for Complementary and Integrative Health

recognizes these methods as part of the "whole person care model," which addresses both the physical and psychological aspects of health.⁷ Data from various studies on the integration of rehabilitation services, presented in Table 1, provide key insights into global efforts to improve rehabilitation methods through multidisciplinary teamwork and complementary therapies.

Studies by authors such as Reberšek and Salawu highlight the importance of horizontal integration between conventional medicine and complementary methods, particularly in the context of oncology patients and recovery from COVID-19.^{8,9} Reberšek analyzes how integrating complementary methods such as acupuncture and meditation with standard oncology treatments can significantly enhance patients' quality of life by reducing stress and anxiety.⁸ A similar approach is found in Salawu's work, which proposes integrating telemedicine into the rehabilitation of COVID-19 survivors. This method facilitates better coordination among healthcare teams and reduces the burden on hospitals.⁹ He and Tang discuss the challenges and benefits of horizontal and vertical integration within healthcare systems in Asia, where the main issues are resource shortages and weak coordination.¹⁰ These challenges are also reflected in Baigi et al.'s study from Iran, which recommends the digitalization of rehabilitation systems to improve efficiency and standardize services.¹¹ Chu et al. explore the use of technology in rehabilitation clinics and highlight the importance of technological innovations, such as smart clinics and telemedicine, in enhancing the efficiency of rehabilitation services.¹² Meanwhile, Gutenbrunner

Table 1. Overview of studies on the integration of rehabilitation services

Authors (Year)	Country	Study Objective	Method	Results
Reberšek, 2019	Slovenia	To examine the role of integrative oncology as a complement to standard treatments and emphasize complementary methods in cancer care.	Literature review and case analysis.	Integrative oncology significantly improves patients' quality of life by reducing stress, depression, and anxiety during cancer treatment.
Salawu et al., 2020	United Kingdom	To develop a multidisciplinary tele-rehabilitation model for COVID-19 recovery.	Case study and proposal for integrating telemedicine solutions.	The tele-rehabilitation model is effective in addressing the rehabilitation needs of post-COVID-19 patients.
He, Tang, 2021	Hong Kong, Singapore, Malaysia, Indonesia	To analyze the integration of healthcare services for the elderly in Asia.	Literature review (2009–2019).	Early-stage integration models show promise with horizontal and vertical approaches but face challenges in system capacity and functionality.
Baigi et al., 2022	Iran	To recommend registration systems for rehabilitation services.	Literature review.	Digitalization and standardization of rehabilitation systems improve service delivery efficiency in Iran.
Chu et al., 2022	Hong Kong	To propose a smart rehabilitation clinic with integrated technology.	Qualitative analysis and proposal for technological innovations.	Technological innovations, including telemedicine, enhance rehabilitation service efficiency.
Gutenbrunner, 2022	Germany, Italy, Switzerland	To explore the role of nurses in rehabilitation.	Theoretical analysis and reflection.	Nurses play a crucial role throughout all phases of rehabilitation, with recommendations to strengthen their capacities.

Shahabi, 2022	Iran	To explore the integration of rehabilitation services into primary healthcare.	Qualitative interviews with policymakers and healthcare experts.	Proposed policies include increasing political support and empowering healthcare workers to better integrate rehabilitation services.
De Cola et al., 2023	Italy	To describe the hub-and-spoke model for neurorehabilitation.	Quantitative analysis of patient data before and after implementing the model.	Implementation of the hub-and-spoke model increased patient intake and improved the quality of neurorehabilitation care.
Louw et al., 2023	South Africa	To analyze rehabilitation service capacity in South Africa.	Survey research using WHO' rehabilitation data collection template.	Identified challenges in human resources, insufficient integration at the primary healthcare level, and inefficient referral systems.
Zubac et al., 2024	Serbia	To examine the holistic approach to care for individuals with depression and the role of nurses in destigmatization.	A 20-year literature review on holistic healthcare approaches.	Holistic care improves the quality of life for individuals with depression and reduces stigma by addressing physical, mental, and spiritual needs.

emphasizes the crucial role of nurses in delivering rehabilitation care, particularly in the long-term rehabilitation of patients with chronic diseases.¹³ In Zubac et al.'s work in Serbia, a holistic approach is applied to patients with depression, where multidisciplinary teams provide psychological support alongside physical therapies. This integration underscores the importance of psychosocial rehabilitation as part of comprehensive healthcare.¹⁴

These studies highlight a growing trend toward the adoption of multidisciplinary teamwork and complementary therapies as fundamental components of integrated rehabilitation services (Table 1).

The integration of rehabilitation services, as presented in Table 2, underscores the complexity and importance of multidisciplinary teams and complementary therapies in improving health outcomes for various patient

populations. The analyzed studies demonstrate that integrative approaches in healthcare systems can significantly enhance patients' quality of life, but also highlight key barriers that hinder their broader implementation.

The integration of rehabilitation services can be categorized into horizontal (across different levels of healthcare) and vertical (within a single level, among different specialties) integration. Horizontal integration involves connecting primary, secondary, and tertiary care to ensure continuous information flow and coordination among healthcare professionals. He and Tang describe examples of both horizontal and vertical integration in Asia, emphasizing the crucial role of primary healthcare in linking long-term, curative, and preventive care, particularly for elderly patients.¹⁰ Similarly, a study in Italy discusses horizontal integration through a hub-and-spoke model for neurorehabilitation, where specialized centers support smaller units in rural

areas.¹⁶ Vertical integration, particularly through technological support, is also vital for rehabilitation processes. Chu et al. highlight the use of smart systems and telemedicine services in rehabilitation clinics, which improve coordination and allow for personalized care.¹²

Most studies focus on specific target populations in rehabilitation programs. In Asia, He and Tang emphasize the elderly as a key target group, given the increasing prevalence of chronic diseases and the need for long-term care.¹⁰ De Cola et al. in Italy focus on patients with neurological disorders,¹⁶ while Louw et al. in South Africa highlight vulnerable populations with limited access to rehabilitation services.¹⁷ Salawu et al. identify COVID-19 survivors as a new target group, requiring specialized tele-rehabilitation due to the high risk of long-term functional impairments following severe respiratory illness.⁹ In Serbia, Zubac et al. underscore the importance of a holistic approach to treating individuals with depression, where multidisciplinary teams provide psychological support alongside physical therapies. Nurses play a key role in reducing stigma through patient and community education, and the holistic approach helps prevent social isolation.¹⁴ Several barriers hinder the effective integration of rehabilitation services. In Asia, He and Tang report system fragmentation, lack of coordination, and insufficient staffing as key challenges.¹⁰ De Cola et al. in Italy note limited resources in rural areas, which complicate the maintenance of care quality.¹⁶ Louw et al. identify inefficient referral systems and a shortage of human resources as obstacles to providing effective rehabilitation services in South Africa.¹⁷ Salawu et al. point out technical barriers to accessing telemedicine, which hinder the implementation of tele-rehabilitation.⁹ The success of integrated rehabilitation systems depends on several factors. Electronic health records and telemedicine

technologies, as emphasized by He and Tang and Chu et al., improve coordination and reduce fragmentation in rehabilitation services.^{10,12} De Cola et al. highlight the importance of regional support and coordination between specialized centers and smaller units.¹⁶ The education and engagement of rehabilitation staff, particularly nurses, as noted by Gutenbrunner et al., are essential for maintaining continuity of care and improving patient outcomes.¹³ In Slovenia, Reberšek emphasizes the importance of a holistic, patient-centered approach in integrative oncology, combining standard oncological treatments with complementary methods like meditation, acupuncture, and lifestyle modifications. This approach helps not only improve physical health but also reduce stress and anxiety, which are crucial for patients with chronic diseases like cancer.⁸

Long-term outcomes from integrated rehabilitation services include reduced hospitalizations, improved quality of life, and better functional results. Salawu et al. emphasize that tele-rehabilitation reduces hospital burdens and accelerates recovery for COVID-19 survivors.⁹ De Cola et al. note that the hub-and-spoke model reduces the need for patient migration to other regions.¹⁶ Louw et al. highlight the socio-economic benefits of integrated rehabilitation programs in South Africa.¹⁷ Recommendations from these studies stress the need for further development of technological solutions, such as telemedicine and smart clinics, enhanced multisectoral collaboration, and strengthened political and institutional support for integrating rehabilitation services. Shahabi et al. specifically emphasize the importance of increased political support and funding for rehabilitation services in low- and middle-income countries.¹⁵

This analysis explores the key aspects of integrating rehabilitation services from

both a global and regional perspective, offering valuable insights into the practical barriers and opportunities for system improvement. The integration of rehabilitation services through multidisciplinary teamwork and technology holds significant potential to enhance patients' quality of life. However, challenges such as limited resources, insufficient education, and technical barriers hinder broader implementation.

Addressing these issues through focused staff education, investment in digital infrastructure, and the development of holistic programs, including telemedicine, will be crucial for the future of rehabilitation services.

To overcome these challenges and improve the application of integrative methods, several key strategies should be prioritized. First, professional training is essential. Developing training programs for healthcare professionals will ensure that they are better equipped to understand and apply complementary therapies within rehabilitation.

Additionally, healthcare systems must be strengthened by improving infrastructure and investing in the integration of care across different levels. Lastly, further research is required to validate the benefits of the integrative approach in rehabilitation, particularly in resource-limited settings.

Research focusing on the long-term outcomes of rehabilitation and the effectiveness of integrative methods for specific patient populations could provide valuable insights. Such studies are critical for optimizing these approaches and expanding their application, especially in low- and middle-income countries.

Table 2. Key aspects of rehabilitation service integration

Authors	Type of Integration	Population	Integration Model	Barriers	Factors	Outcome	Recommendation
Reberšek, 2019	Horizontal integration between standard oncology and complementary methods	Patients with various types of cancer	Combination of standard medical treatments with complementary methods	Lack of communication between patients and doctors regarding complementary methods	Active patient involvement in therapy selection, professional guidance, and education on complementary methods	Improved quality of life, reduced stress, and better clinical outcomes	Education and communication between patients and doctors about complementary therapies
Salawu et al., 2020	Multidisciplinary integration	COVID-19 survivors	Tele-rehabilitation through multidisciplinary teams	Lack of digital infrastructure in certain regions	Access to telemedicine and education of healthcare workers	Reduction of hospital burden and improvement of quality of life	Further development of telemedicine solutions
He, Tang, 2021	Horizontal and vertical integration of healthcare services in Asia, focusing on the connection between primary, secondary, and tertiary care	Elderly population	Regional healthcare systems and public-private integrations, including multidisciplinary teams	Staff shortages, poor coordination, and inadequate resources. Additionally, insufficient role of the private sector in some systems	Electronic health records and continuity of care, but there is a need to strengthen the integration of the private sector	Improved care coordination and reduction of unnecessary hospitalizations	Further development of electronic systems and strengthening of teamwork

Baigi et al., 2022	Primarily horizontal, with an emphasis on the implementation of a national registry	Patients in rehabilitation	Standardization and digitalization of rehabilitation systems through a registry	Lack of data and technical capacities, weaknesses in staff education and training	User education and data transparency	Improvement of rehabilitation services quality	Increased investment in digital infrastructure and staff training
Chu et al., 2022	Vertical integration of technologies in rehabilitation centers	Patients with disabilities	Smart rehabilitation clinics with telemedicine	Technical barriers and implementation costs	Technological innovations, such as telemedicine and artificial intelligence	Increased efficiency and cost reduction	Expansion of telemedicine services and user education
Gutenbrunner, 2022	Horizontal integration within rehabilitation teams	Patients with chronic conditions	Inclusion of nurses in all stages of rehabilitation	Lack of specialized training for nurses in rehabilitation	Strengthening the role of nurses and multidisciplinary collaboration	Improving patient outcomes through long-term care	Specialized training for nurses in the field of rehabilitation
Shahabi, 2022	Horizontal and vertical integration of primary healthcare	Inclusion of mobile teams and tele-rehabilitation	Lack of financial resources and weaknesses in training	Strengthening political support and increasing the budget	Reduction of hospitalizations and improvement of quality of life	Increasing political support and budget for rehabilitation services	People with disabilities

De Cola e al., 2023	Horizontal integration in neuro-rehabilitation	Neurological patients	Hub and spoke model for neuro-rehabilitation	Limited resources in secondary centers	Increased patient admissions and improved care	Improved accessibility and quality of care	Further expansion of the model to other areas of rehabilitation
Louw et al., 2023	Horizontal integration within the public sector	Vulnerable population in South Africa	WHO template for data collection on rehabilitation	Lack of human resources and inefficient referral systems	Use of shared data and multisectoral collaboration	Improving the accessibility of rehabilitation services	Strengthening multisectoral collaboration and support at the national level
Zubac et al., 2024	Horizontal integration through the application of a holistic approach in the care of patients with mental disorders	Individuals with depression and anxiety, including those with chronic illnesses	Holistic programs that include lifestyle changes, physical activity, improvement of social support, and spiritual care	Insufficient public education on depression and stigmatization of patients	Education for nurses and the population, individualized care, and a multidisciplinary approach	Improving the mental and physical health of patients, reducing stigmatization, and enhancing social relationships	Continuous education for nurses on holistic care and patient destigmatization

Conclusion

The integrative approach to rehabilitation is an innovative and comprehensive healthcare method that addresses the physical, psychological, and social aspects of recovery. Through the collaboration of multidisciplinary teams and the incorporation of complementary therapies, this approach enables personalized treatments that improve patients' functionality and quality of life. However, challenges in implementation remain, particularly in resource-limited countries.

To address these challenges, further research, along with strategic investments in professional education and healthcare infrastructure, are essential for enhancing the efficacy and reach of integrative rehabilitation approaches.

Conflict of Interest

The authors declare no conflict of interest.

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