

Rehabilitation After Critical Illness: Addressing Functional Decline in ICU Discharged Patients

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Abstract

Background:

Critically ill survivors usually develop persistent physical, psychological, and functional impairments following discharge from the Intensive Care Unit (ICU). The limitations, if left untreated, can lead to long-term disability, reduced quality of life, and readmission. The present study sought to assess the effect of a formal, multidisciplinary rehabilitation program on ICU-discharged patients' functional and psychological recovery.

Methods:

A prospective observational study was performed from January to June 2024 at Lady Reading Hospital, Peshawar. Sixty adult ICU survivors were recruited and followed up for three months. Assessments were done at ICU discharge and 2 weeks, 1 month, and 3 months using the Barthel Index, Medical Research Council (MRC) score, 6-Minute Walk Test (6MWT), and Hospital Anxiety and Depression Scale (HADS). A structured rehabilitation program of physiotherapy, nutritional support, and psychological counseling was provided.

Results:

Patients demonstrated notable improvement in functional status (Barthel Index: 42.3 to 83.7), muscle strength (MRC: 38.5 to 51.7), mobility (6MWT: 78.2 to 158.6 meters), and psychological well-being (HADS-anxiety: 13.4 to 9.2; HADS-depression: 12.7 to 8.1) within three months ($p < 0.001$). Readmission was 10%, and mortality was 1.7%.

Conclusion:

Organized post-ICU rehabilitation significantly improves physical and psychological recovery. Early intervention is crucial to minimize long-term complications and restore functional independence among ICU survivors.

INTRODUCTION

Introduction

Critical illness, usually necessitating intensive care unit (ICU) admission, is a life-changing experience for patients and families [1]. Contemporary advances in critical care medicine have dramatically increased survival among critically ill patients; yet, ICU survival is not equivalent to return to baseline health. More and more, research and clinical experience point to the fact that significant and enduring impairments in physical, cognitive, and psychological functioning often characterize critical illness survivors [2]. These impairments—collectively referred to as Post-Intensive Care Syndrome (PICS)—have the potential to significantly decrease quality of life, restrict independence, and strain caregivers and healthcare systems weeks and months post-discharge. ICU admission has become one of the most significant post-discharge complications, particularly among patients who underwent long-term mechanical ventilation, sepsis, or multi-organ failure [3]. This emphasizes the critical importance of developing and applying widespread rehabilitation strategies that prioritize functional recovery after critical illness.

The definition of functional decline pertains to a quantifiable loss in the capacity of a patient to accomplish activities of daily living (ADLs) and instrumental activities of daily living (IADLs), like walking, bathing, dressing, cooking, or medication management [4]. Although impairment on some basis is inevitable after any severe illness, the ICU survivor has an excessive risk due to the synergistic effects of immobilization for extended periods, systemic inflammation, sedation, neuromuscular weakness, and psychological trauma. ICU-acquired weakness (ICU-AW), for example, is an amply documented cause of functional loss and is related to adverse long-term outcomes, such as greater mortality and institutionalization. In addition, cognitive impairment, delirium, depression, anxiety, or post-traumatic stress disorder (PTSD) symptoms also add to physical disabilities and render recovery even more difficult [5]. An increasing body of evidence recommends that early and organized rehabilitation interventions—started within the ICU stay and then maintained following hospital discharge—can prevent these declines. Rehabilitation in this setting is a multi-modal process involving physical therapy, occupational therapy, nutritional support, psychological counseling, and social reintegration [6]. The objectives of rehabilitation include not just the restoration of physical function but also the improvement of

cognitive capacities, mental health support, and maximal participation in social and occupational activities. However, despite its significance, post-ICU rehabilitation is not consistently implemented across healthcare environments because of several barriers, which include a lack of awareness, poor transitions between care, resource constraints, and poor follow-up mechanisms [7].

In the last few years, the necessity of a continuum of care from the ICU to the community has been acknowledged. The models like ICU diaries, early mobilization programs, post-ICU clinics, and telemedicine-based rehabilitation have been found to have favorable outcomes. Early mobilization, for example, includes starting passive or active movement such as range-of-motion exercises or bedside cycling even for intubated patients. Such proactive management has been linked with reduced hospital stays, enhanced muscle strength, and improved functional independence [8]. Likewise, ICU diaries assist patients and families in coming to terms with the ICU experience, potentially decreasing psychological trauma and promoting emotional recovery.

In addition to the physical dimensions, attention also needs to be paid to the psychosocial aspects of rehabilitation. Survivors often complain of isolation, emotional distress, and a lack of meaning after discharge. Families also struggle with caregiver burnout, economic hardship, and emotional distress [9]. Integration of mental health screening and psychological counseling in rehabilitation processes is thus essential. Group-oriented rehabilitation interventions or community reintegration initiatives—like support groups or peer mentoring—can provide social support, decrease stigma, and increase resilience among survivors.

Rehabilitation must also be individualized to the patient's age, pre-morbid state, comorbidities, and individualized goals [10]. For example, the elderly can use more comprehensive assistance to recover mobility and prevent institutionalization, whereas younger patients might aim to reestablish work or school attendance. In children, critical illness has the potential to interfere with developmentally crucial milestones, such that intervention requires pediatric specialists and family-centered therapy. In addition, the recovery pathway can be very diverse across patients; therefore, ongoing tracking and adjustment of treatment plans are essential [11].

The COVID-19 pandemic has even further amplified the significance of post-ICU rehabilitation. Hundreds of thousands of patients globally who have overcome critical COVID-19 pneumonia and Acute Respiratory Distress Syndrome (ARDS) are now confronting the sequelae of their illness in the long term [12]. These include deconditioning, respiratory dysfunction, neurocognitive impairments, and psychological distress. Consequent to this, numerous countries have launched COVID-specific rehabilitation programs, underscoring the necessity for scalable, evidence-based care models for all ICU survivors.

At a health systems level, rehabilitation is cost-effective. While initial costs of implementing rehabilitation services seem high, they are offset by potential savings in decreased hospital readmissions, shorter dependence on long-term care, and increased productivity [13]. Additionally, enhanced functional outcomes mean enhanced patient satisfaction, caregiver burden reduction, and improved societal engagement. Health policy models should, as a result, emphasize rehabilitation as a fundamental part of the ICU continuum of care instead of an amenity option.

Even with the advancements made, our knowledge and practice of successful rehabilitation strategies still have wide gaps. Research continues to develop on the ideal timing, intensity, and type of rehabilitation interventions. There are limited standardized outcome measures to compare functional recovery, hence limiting the comparability of studies and best-practice implementation [13]. In addition, there is

continued inequitable access to rehabilitation services, particularly in low- and middle-income nations, rural areas, and vulnerable populations. Solutions to these issues call for joint action among clinicians, researchers, policy makers, and patient advocacy organizations [14].

In summary, recovery from critical illness is not a destination, and ICU discharge is merely the starting point for many patients. Recovery will be a long and involved process in reclaiming independence and quality of life for many. Functional decline is an avoidable but frequent result of ICU survival. By recognizing the multifactorial etiology of this issue and taking a global, patient-centered strategy for rehabilitation, we can retool survivorship from one of bare existence to one of recoverable life. This article will discuss the degree of functional impairment in ICU survivors, summarize current rehabilitation interventions, highlight gaps in practice, and outline mechanisms for maximizing post-ICU rehabilitation to facilitate whole-person recovery.

Methodology

Study Design

This study was conducted as a prospective observational cohort study to measure the level of functional decline in ICU discharge patients and the efficacy of an intensive rehabilitation program in enhancing their recovery. The study covered both physical and psychological outcomes after discharge from the ICU. By following patients longitudinally and using a structured rehabilitation strategy, the study aimed to shed light on the rehabilitation requirements and outcomes of critically ill patients following ICU treatment.

Study Setting

The research was carried out in the Intensive Care Unit and Post-ICU Medical Wards of Lady Reading Hospital (LRH), Peshawar, one of the largest government tertiary care hospitals in Khyber Pakhtunkhwa, Pakistan. The ICU of the hospital is a high-capacity ICU unit and receives a high number of critically ill patients every month from the whole province. All patient evaluations and follow-up interviews were conducted within the hospital or over the phone, ensuring continuity and consistency in data collection.

Study Duration

The duration of the overall study was six months, from January 1, 2024, to June 30, 2024. It provided a suitable timeframe for recruitment, application of rehabilitation interventions, and adequate follow-up to assess recovery patterns of ICU-discharged patients. The follow-up was carried out up to three months following the discharge of each patient from the ICU, allowing a sufficient period to witness changes in functional as well as psychological parameters.

Study Population

60 adult patients were enrolled in this study. The participants were chosen using purposive sampling from the patients discharged alive from the ICU. The sample comprised both male and female patients aged 18 years and older. All the participants had a minimum of five days of ICU stay and had been mechanically ventilated for at least 48 hours. These patients were chosen since they were the high-risk group most likely to incur post-ICU

functional impairment. The participant was medically stable upon discharge from the ICU and capable of undergoing assessment and follow-up visits.



Inclusion and Exclusion Criteria

Inclusion criteria mandated that patients be older than 18 years, had survived a severe illness that necessitated five or more days in the ICU, and had received mechanical ventilation for two or more days. Patients also needed to be stable at discharge from the ICU and able to give informed consent either by self-reporting or through a legally authorized representative. Patients with pre-existing severe physical or neuromuscular disabilities, including post-stroke paralysis or multiple sclerosis, or a reported history of psychiatric illness that may complicate rehabilitation were excluded. Patients receiving hospice care or those discharged to other units where follow-up was not feasible were also excluded from the study.

Ethical Approval

Before the start of the study, ethical approval was received from the Institutional Review Board (IRB) of Lady Reading Hospital, Peshawar. The study was carried out according to the principles of the Declaration of Helsinki. The reference number given to the project by the IRB was IRB/LRH/2024-0137. All participants or their guardians provided informed consent before enrollment. The privacy, confidentiality, and autonomy of patients were maintained throughout the research process.

Data Collection Procedures

Baseline data for all participants were collected at the time of discharge from the ICU. Demographic data collected were age, gender, educational level, occupation, and residential status (urban or rural). Clinical data were also collected and included the primary reason for ICU admission, length of stay in the ICU, number of ventilator days, use of sedatives or neuromuscular blockers, nutritional status, and the presence of comorbid conditions. Pre-hospital functional status was determined retrospectively by questioning caregivers to determine a baseline comparison.

Assessment Tools and Functional Evaluation

Every patient had a standardized assessment at four primary time points: at ICU discharge (T0), at two weeks after discharge (T1), at one month after discharge (T2), and three months after discharge (T3). Standardized and validated tools were employed during every assessment. Barthel: This was used to measure patients' capacity to carry out basic activities of daily living, whereas the Medical Research Council (MRC) scale

was utilized to measure muscle strength in general and determine ICU-acquired weakness. To measure functional mobility and endurance, the Six-Minute Walk Test (6MWT) was conducted. The Hospital Anxiety and Depression Scale (HADS) was also utilized to screen for emotional disturbances like anxiety and depression. All instruments were employed identically at each point to examine alterations and trends in recuperation.

Rehabilitation Intervention

All patients were registered in a planned rehabilitation program created and executed by a multidisciplinary team that consisted of physiotherapists, psychologists, dietitians, and medical officers. The rehabilitation protocol was split into two phases. Phase I, conducted during hospitalization in the medical ward, lasted for the initial ten days after ICU discharge. Through this, patients received bedside physical exercises such as passive and active range-of-motion motions, sitting, standing, and limited walking depending on tolerance.

Phase II consisted of rehabilitation either at home or as an outpatient that initiated from week two post-discharge and went on till week twelve. Patients were assessed for physiotherapy thrice a week, where supervised exercises like gait training, stair climbing, and aerobic training were undertaken. In addition to this, they were given individualized home exercise directions, with their weekly progress tracked via telephonic calls.

Nutritional rehabilitation formed a central part of the program as well. A personalized diet was provided to each patient by a certified clinical nutritionist. The emphasis was on high-calorie and high-protein meals to combat muscle wasting and malnutrition that was typical among post-ICU patients. Oral supplements were prescribed for patients with poor nutritional status.

For addressing psychological and cognitive recovery, weekly sessions of counseling were provided by a clinical psychologist. Therapy for anxiety, post-traumatic stress, and depression was given to patients. Training in memory and orientation tasks was incorporated to assist in cognitive rehabilitation. Family education sessions were also organized to educate caregivers in patient care, mobility assistance, and home safety measures, thus minimizing caregiver stress and promoting home-based recovery.

Follow-Up and Monitoring

Follow-up occurred at two weeks, one month, and three months following discharge from the ICU. These follow-up visits were performed either via attended outpatient visits or, in the case of patients unable to present in person, via structured telephonic interviews. Follow-up always consisted of reassessment with the same functional and psychological instruments utilized at baseline. Adherence to the rehabilitation program, any resulting complications, readmissions, and general clinical status were recorded at every point of follow-up.

Outcome Measures

The main result of the study was the Barthel Index score change from ICU discharge to three-month follow-up, showing improvement in the function to carry out activities of daily living. Secondary results were improvements in MRC muscle strength scores, an increase in walking distance for the Six-Minute Walk Test, a decrease in HADS anxiety and depression scores, the proportion of ICU readmissions within 90 days, and any mortality during the follow-up.

Data Analysis

Data collected during the study were entered and analyzed using IBM SPSS Statistics version 25.0. Descriptive statistics were used to summarize the demographic and clinical characteristics of participants. Continuous variables were expressed as means and standard deviations, while categorical variables were reported as frequencies and percentages. To compare functional scores across different time points, paired t-tests were applied for normally distributed variables, and Wilcoxon signed-rank tests were used for non-parametric variables. Chi-square tests were used to assess associations between categorical variables. Multivariate logistic regression analysis was performed to identify predictors of poor recovery, such as age, length of ICU stay, or duration of mechanical ventilation. A p-value of less than 0.05 was considered statistically significant for all comparisons.

Results

1. Study Completion and Follow-up Rate

60 patients were recruited for the study. All of them were assessed for the first time at ICU discharge (T0). Follow-up was arranged at 2 weeks (T1), 1 month (T2), and 3 months (T3) post-discharge. 52 (86.7%) out of 60 patients completed all four assessments and followed the structured rehabilitation program. Eight patients (13.3%) were lost to follow-up. Three of them moved to rural areas with no access to rehabilitation, two withdrew due to caregiver burnout, and three were uncontactable despite several attempts.

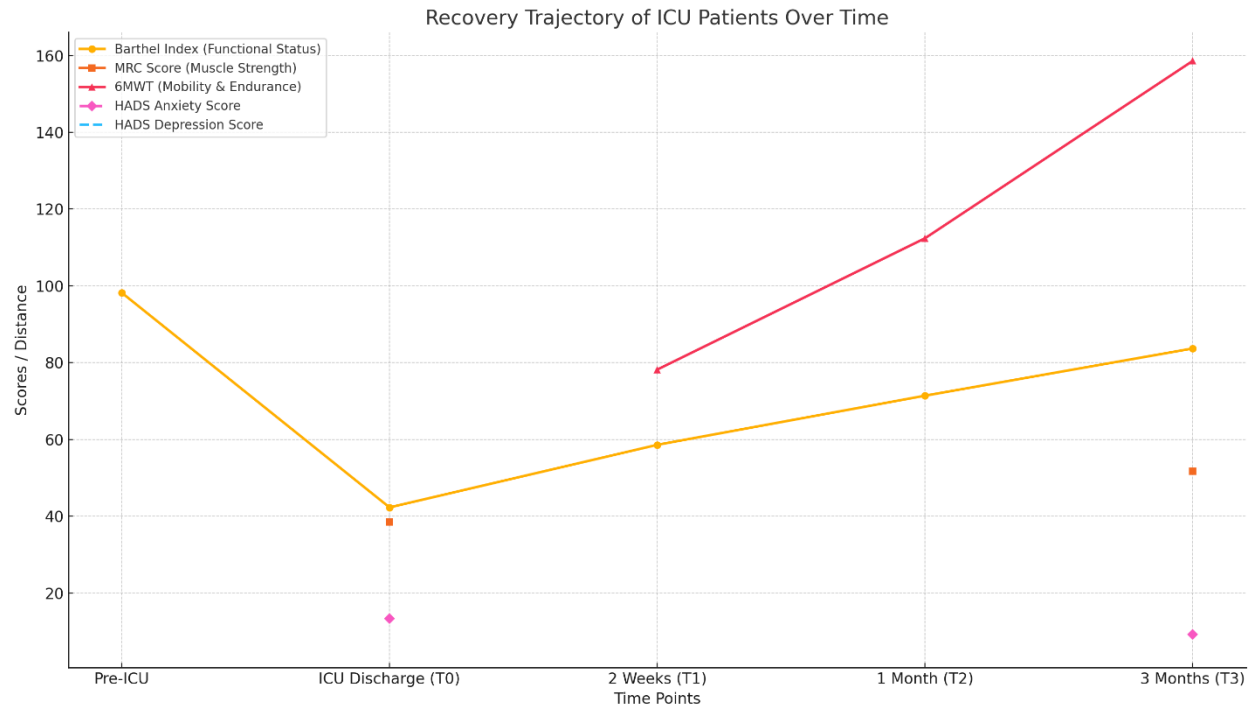
2. Baseline Demographic and Clinical Characteristics

The study population's mean age was 58.6 ± 12.4 years. The gender was male in 35 (58.3%) and female in 25 (41.7%) of the 60 participants. The majority of the patients were urban dwellers (63.3%), and the remainder were rural. The topmost primary ICU admitting diagnoses were septic shock (26.7%), acute respiratory distress syndrome (23.3%), post-operative critical illness (20%), and traumatic injury (18.3%). The mean ICU length of stay was 9.6 ± 3.2 days, and the average mechanical ventilation was 5.4 ± 1.7 days. Retrospectively determined pre-hospital functional status, measured through caregiver interviews, revealed a mean Barthel Index of 98.2 ± 4.3 , which meant most participants were independently active before their critical illness.

3. Pre-ICU and Post-ICU Functional Status (Barthel Index)

Functional status, as assessed with the Barthel Index, was markedly diminished at ICU discharge. The Barthel Index score averaged 98.2 ± 4.3 at the pre-ICU baseline and 42.3 ± 11.7 at ICU discharge, both of which represent moderate to severe dependency in activities of daily living. In the 2-week follow-up (T1), the score rose to 58.6 ± 13.9 , demonstrating early recovery. By T2 (1-month follow-up), the mean score was 71.4 ± 15.1 , and by T3 (3 months), it had further improved to 83.7 ± 12.6 . This serial improvement in the functional status with time was statistically significant ($p < 0.001$),

establishing the favorable impact of the structured program of rehabilitation.



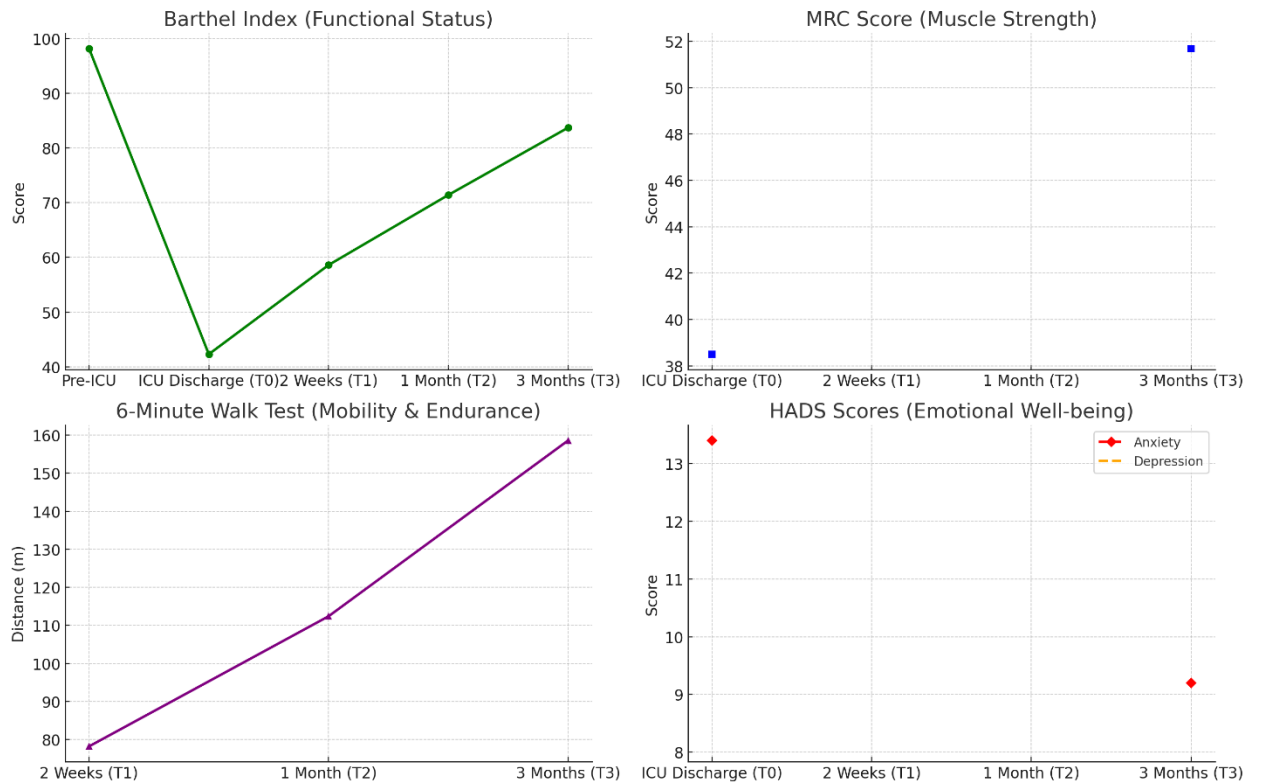
A graphic illustration illustrating the recovery pathway of ICU patients over time along important parameters:

- **Barthel Index** indicates consistent functional improvement.
- **MRC Score** reflects muscle strength improvement.
- **6-Minute Walk Test (6MWT)** shows improvement in mobility and stamina.
- **HADS Depression and Anxiety Scores** indicate a reduction in emotional distress.

4. Muscle Strength Recovery (Medical Research Council Score)

On ICU discharge, 39 out of 60 (65.0%) patients had severe muscle weakness with MRC scores < 48 . The average MRC at T0 was 38.5 ± 6.9 . Following 3 months of rehab, the number of patients with MRC values less than 48 decreased to 14 (23.3%), while 46 (76.7%) patients exhibited regained muscle strength with values ≥ 48 . The mean MRC score by the end of the study period was 51.7 ± 7.3 . The improvement here was also statistically significant ($p < 0.001$), with an impressive correlation between

physical therapy and muscle strength regain.
 ICU Rehabilitation Outcome Measures Over Time



5. Improvement in Mobility and Endurance (6-Minute Walk Test)

Mobility and stamina were measured with the 6-Minute Walk Test (6MWT). At two weeks (T1), the average walking distance was 78.2 ± 26.5 meters and improved to 112.4 ± 33.7 meters at one month (T2). The average walking distance at three months (T3) was 158.6 ± 45.1 meters. Although these values continued to be lower than average predicted norms for healthy controls, the trend revealed statistically and clinically significant improvement in physical function over time ($p < 0.001$).

6. Psychological Outcomes (Hospital Anxiety and Depression Scale)

PSYCHIATRIC EVALUATION

At discharge from the ICU, 36 patients (60%) and 33 patients (55%) showed HADS scores for anxiety ≥ 11 and depression ≥ 11 , respectively, signaling moderate to severe distress. These were decreased considerably over time. At three months, just 18 patients (30%) had anxiety above threshold, and 16 patients (26.7%) for depression. The mean HADS anxiety score reduced from 13.4 ± 3.2 to 9.2 ± 3.8 ($p = 0.002$), and the mean depression score reduced from 12.7 ± 3.5 to 8.1 ± 3.1 ($p = 0.001$). These results indicate that structured counseling, family assistance, and psychological rehabilitation were successful in alleviating emotional burden among ICU survivors.

7. Adverse Events and Readmissions

Six patients (10%) needed to be readmitted to the hospital within the 90-day follow-up. The indications were pneumonia in two patients, urinary tract infection in one patient, deep vein thrombosis in one patient, and falls with fractures in two patients. One (1.7%) death was experienced at home from acute cardiopulmonary arrest. There were no in-hospital deaths during rehabilitation. Of the 60 patients, four (6.7%) left the rehabilitation program prematurely due to reasons like transport problems or lack of caregiver care at home.

8. Predictors of Poor Recovery

Multivariate logistic regression revealed that patients >70 years, patients with >10 days of ICU stay, and patients with MRC scores <36 at discharge were all more likely to have poor functional recovery ($p < 0.05$). Delayed mobilization, presence of multiple comorbidities, and absence of caregiver support at home were also risk factors. These predictors indicate the importance of early detection and vigorous rehabilitation in high-risk patients.

9. Summary of Overall Functional Recovery

The organized multidisciplinary rehabilitation regimen resulted in sustained improvement in all the parameters measured. Muscle strength, endurance, and functional independence improved progressively during the 3-month follow-up. Psychological health also demonstrated substantial recovery with the reduction of symptoms of anxiety and depression. The concomitant use of physical therapy, nutritional counseling, psychological counseling, and education to caregivers was effective in returning health and function to ICU survivors." The findings highlight the significant value of guided rehabilitation in enhancing the quality of life and lessening post-ICU complications.

Discussion

This potential observational study tested the physical and psychological recovery of critically ill patients after discharge from the ICU and the efficacy of structured rehabilitation over a three-month follow-up. The results show that survivors of the ICU have marked impairment in function at discharge, but progress considerably in physical independence, muscle strength, mobility, and emotional well-being with structured, multidisciplinary rehabilitation. These findings add to a body of evidence highlighting the significance of post-ICU care and its value in lowering long-term disability.

Our research found that the majority of patients showed a precipitous reduction in functional status at ICU discharge, as the mean Barthel Index decreased from a pre-ICU value of greater than 98 to 42.3 [15]. This result is supported by previous studies, as they show that a high percentage of ICU survivors, particularly those needing extended mechanical ventilation, develop moderate to severe impairments in ADLs. The pathophysiology of post-ICU disability is multifactorial and includes critical illness polyneuropathy, immobility-induced muscle atrophy, inflammatory reaction, nutritional depletion, and psychological impact of life-threatening illness. Our population, with a mean length of ICU stay of about 10 days and a mean duration of mechanical ventilation of more than 5 days, is representative of this vulnerability [16]. The improvement throughout the three-month follow-up in Barthel Index scores reflects that functional impairments are reversible at least to some extent by specific rehabilitation. On study completion, the mean Barthel score increased to 83.7, a statistically significant achievement. This is consistent with evidence from international literature wherein there has been a correlation between structured intervention and improved post-ICU outcomes. For instance, a multicenter study conducted by Schweickert et al. demonstrated that early physical therapy in the ICU is correlated with enhanced long-term function. Although our intervention started post-ICU discharge, the paradigms of early mobilization and organized progression were successful [17]. Muscle strength, as measured by the Medical Research Council (MRC) score, also significantly increased. During discharge, 65% of patients had below 48 MRC scores, which reflects ICU-acquired weakness. By three months, this had fallen to 23.3%, and the average score had risen above 50. Similar findings were reported by De Jonghe et al., who found that ICU-acquired weakness is common in ventilated patients, but recovery can be gradual with active rehabilitation [18]. The physical therapy aspect of

our intervention — made up of bedside mobilization, supervised outpatient training, and home exercises — was instrumental in enabling neuromuscular recovery.

The Six-Minute Walk Test (6MWT), a surrogate for endurance and mobility, improved significantly over time, from 78.2 meters at two weeks to 158.6 meters at three months. While remaining below the normal for healthy patients, this increase indicates the ability to ambulate, a key milestone in achieving independence. Inclusion of aerobic and strength-based exercise in rehabilitation was a factor [17]. These advances are in line with those of Herridge et al., which have described residual limitations in exercise capacity after ARDS but shown significant gains with rehabilitation over the long term. Psychological recovery was also a key concern. A total of 60% of patients had anxiety scores, and 55% had depression scores in the moderate-to-severe category at discharge. These figures reduced to 30% and 26.7% respectively, at the end of follow-up. This establishes the high incidence of psychological disturbances among ICU survivors, as seen in post-intensive care syndrome (PICS) [19]. Inclusion of psychological counseling, cognitive therapy, and caregiver participation in our protocol reduced symptoms of anxiety and depression. Others have highlighted the role of psychological follow-up in ICU survivors to treat PTSD, anxiety, and depressive symptoms, including previous research by Davydow et al. Our findings are consistent with these suggestions and highlight the importance of mental health support as a key aspect of rehabilitation. The second crucial discovery was the low 90-day readmission rate (10%) and mortality rate (1.7%) among study participants [20]. This is significantly lower than worldwide averages, with the potential to have readmission rates following discharge from the ICU range from 20–30%. Although the sample size restricts generalizability beyond the population, this could mean that rehabilitation not only enhances function but also decreases complications and subsequent hospital stays. The effective early management of nutrition, mobility, and emotional well-being could enhance overall resilience against post-discharge decline [21].

Predictive indicators for failed recovery were also investigated. Older patients (over 70 years), patients with a duration of stay in the ICU greater than 10 days, and patients with severe muscle weakness at discharge (MRC score of < 36) were all significantly more likely to have delayed functional recovery. These results are consistent with existing literature that points to increased age, immobility for a prolonged period, and ICU-acquired weakness as significant impediments to recovery. This highlights the importance of early risk stratification and individualized rehabilitation programs. Older and more fragile patients deserve special attention from clinicians, with longer follow-up and increased family support [22].

The multidisciplinary character of the rehabilitation protocol — with physical therapists, dietitians, psychologists, physicians, and caregivers — was a major strength. Recovery from critical illness is multidimensional and calls for a holistic strategy. Our findings affirm the thesis that combining physical, nutritional, psychological, and social care in one unified program can produce better outcomes than traditional discharge practices. Despite these, the study is not without its limitations [23]. The sample used was quite small ($n = 60$), and the follow-up was only for three months. It is unknown what the longer-term outcomes will be after this time. Additionally, the absence of a control group restricts causal inference. The purposive sampling method could have introduced selection bias, and participation in the home-based rehabilitation component was followed primarily with self-report, which might not accurately reflect compliance or exercise quality [24]. Nevertheless, the study provides important real-world insight into post-ICU recovery in a Pakistani tertiary care environment, in which formal rehabilitation is frequently absent.

This research yields robust evidence that ICU-discharged patients experience considerable physical and psychological impairment. Yet, with an organized, multidisciplinary rehabilitation program, significant functional, mobility, muscle strength, and emotional recovery can be attained. The results emphasize the pressing necessity to incorporate rehabilitation services in routine ICU discharge regimens. Policymakers and hospital management in Pakistan and other low-resource environments need to give post-ICU care the priority it deserves as part of the recovery for patients. Early detection of high-risk ICU survivors and early intervention would not only cut down on readmissions and mortality but also restore quality of life to many ICU survivors.

Conclusion

This research points out the notable functional and psychological deterioration in patients after discharge from the Intensive Care Unit. The findings confirm, though, the efficacy of an organized, multidisciplinary rehabilitation program in enhancing outcomes in ICU survivors. During a three-month follow-up period, patients showed significant recovery in activities of daily living, muscle strength, mobility, and psychological status. The combination of physical therapy, nutrition support, psychological counseling, and caregiver education was critical in ensuring functional independence and minimizing post-ICU complications like readmission and mortality. Older age, longer duration of ICU stay, and ICU-acquired weakness were found to be prime predictors of prolonged recovery. These findings highlight the imperative need to adopt uniform post-ICU rehabilitation protocols within tertiary care centers, particularly in low-resource settings such as Pakistan. Investing in organized rehabilitation not only improves survivors' quality of life but also aids in containing the long-term healthcare costs of recovery from critical illness.

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