

Original Article

The Importance of Rehabilitation from War Trauma and Front-Line Acquired Addictions: The Experience of the Pilot Project of the Dnipro Region

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Abstract - Modern armed conflicts produce health, psychological, and social consequences that exceed the traditional concept of physical injury. Veterans returning from the front may present complex clinical conditions combining traumatic injuries, chronic pain, functional deficits, post-traumatic stress disorder (PTSD), emotional disturbances, and war-related addictions. Modern rehabilitation must therefore evolve from simple functional recovery into a multidimensional process aimed at reconstructing the whole person. The pilot project developed in the Dnipro Region is an experimental model of comprehensive veteran care delivered through a twelve-month medical, psychological, and social pathway. Created through collaboration between Ukraine's Ministry of Veterans Affairs and the European Diagnostic Centre "Europe," it aims to build an integrated, measurable system of medical-psychological support for the defenders of Ukraine. The operational model comprises 30 days of specialist inpatient rehabilitation, 30 days of intensive outpatient rehabilitation, and 10 months of rehabilitative follow-up and social reintegration. Its effectiveness is assessed through clinical, functional, psychological, and social key performance indicators (KPIs) capable of measuring the patient's genuine recovery.

Keywords - Addiction, Barthel, FIM, Outcome, PTSD, Rehabilitation, Social reintegration, Ukraine, Veterans.

1. Introduction

War is one of the most extreme traumatic events a human being can experience. Modern armed conflicts produce health, psychological, and social consequences that extend far beyond the traditional concept of physical injury, and the World Health Organization has recognised rehabilitation as an essential component of health systems and a determinant of how populations recover from disability [1,2]. Soldiers exposed to combat simultaneously endure continuous psychological stress, a permanent risk of death, physical pain, the loss of comrades, emotional isolation, and extreme operational conditions. The consequences of this exposure may take many forms, including motor disability, amputation, chronic pain, depression, anxiety, post-traumatic stress disorder (PTSD), alcohol abuse, and dependence on medication or psychoactive substances.

Epidemiological studies of personnel deployed to recent conflicts have documented a high prevalence of mental health problems together with substantial barriers that prevent affected service members from seeking care [4,5]. PTSD, as defined in current diagnostic criteria [4] and addressed in contemporary clinical practice guidelines, is frequently accompanied by impairments in psychosocial functioning whose severity tracks the underlying symptom structure [6]. These findings underline that the clinical needs of veterans returning from the front cannot be reduced to the management of isolated diagnoses.

Among veterans, addiction is frequently a secondary consequence of trauma. Substance use often begins as an attempt to control insomnia, intrusive traumatic memories, pain, anxiety, and hypervigilance, and the high

comorbidity between PTSD and substance use disorders is well documented in the literature [7]. Because the two conditions reinforce one another, contemporary evidence favours integrated approaches that treat trauma and addiction simultaneously rather than sequentially [8,9]. Effective care therefore requires a multidisciplinary strategy that addresses not a single pathology but the entire recovery pathway of the person.

Modern rehabilitation must accordingly evolve from a simple process of functional recovery into a multidimensional process oriented toward the reconstruction of the whole person, integrating psychological trauma therapy, treatment of addiction, physical recovery, and social reconstruction. The present paper describes the design of a twelve-month pilot project developed in the Dnipro Region of Ukraine that operationalises this integrated model and embeds objective, measurable outcomes within it.

2. Materials and Methods

2.1. Project origin and setting

The project originates from a Memorandum of Cooperation signed in Kyiv between the Ministry of Veterans Affairs of Ukraine and the European Diagnostic Centre "Europe" in Dnipro. Its design is aligned with national policies for veteran reintegration and support and with the ongoing development of rehabilitation services and multidisciplinary rehabilitation teams in Ukraine, an effort that international actors have supported as part of strengthening rehabilitation capacity during and after the war. The aim of the programme is to develop an experimental pathway directed at those who defended the independence, sovereignty, and territorial integrity of Ukraine. The project draws on the resources of the European Centre "Europe," including its healthcare infrastructure, diagnostic equipment, qualified medical personnel, and organisational experience.

2.2. Target population

The primary beneficiaries are veterans presenting with the physical consequences of war, psychological difficulties, disorders arising from the use of psychoactive substances, and alcohol abuse. In clinical terms, this population is characterised by the frequent co-occurrence of traumatic injury, chronic pain, functional limitation, PTSD, and substance use, a combination that the model is specifically designed to address in an integrated rather than fragmented manner.

2.3. Twelve-month rehabilitation model

The programme provides for a twelve-month continuum of care organised into three sequential phases, summarised in **Table 1**. Phase 1 consists of 30 days of intensive clinical inpatient care; Phase 2 of 30 days of intensive outpatient rehabilitation; and Phase 3 of ten months of non-intensive rehabilitation and social reintegration. Each phase is delivered by a multidisciplinary team, in line with both international recommendations on the organisation of rehabilitation within health systems [1] and the national development of multidisciplinary rehabilitation teams. The integrated treatment of trauma and addiction that begins in Phase 1 follows established protocols for co-occurring PTSD and substance use disorders [10].

Table 1: Structure of the Twelve-Month Rehabilitation Pathway

Phase	Duration (days)	Main objectives	Activities and personnel
Phase 1 – Intensive clinical inpatient care	30	Multidisciplinary diagnosis; clinical stabilisation; Individual Rehabilitation Plan; motor recovery; pain therapy; psychological assessment; treatment of addiction	Multidisciplinary team: psychiatrist, neurologist, psychiatrist, psychologist, physiotherapist, occupational therapist
Phase 2 – Intensive outpatient rehabilitation	30	Consolidate clinical results and prepare the return to daily life	Intensive physiotherapy; psychological therapy; therapeutic groups; health education; family involvement
Phase 3 – Non-	300 (10	Transform clinical improvement into real	Periodic check-ups; relapse

intensive rehabilitation and reintegration	months)	autonomy	prevention; psychological support; social reintegration; occupational reintegration
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2.4. Outcome measurement

The project introduces a management approach based on objective indicators. Two validated instruments are used. The Functional Independence Measure (FIM) assesses autonomy, movement, cognitive capacity, and self-sufficiency [10], and its scaling properties, structure, and reliability have been examined extensively [14]. The Barthel Index measures performance in activities of daily living and personal independence [12]. Both instruments are long-established tools in neurological and medical rehabilitation [13] and form part of uniform data systems used to compare rehabilitation outcomes across centres [11]. The use of the FIM as a quality indicator for rehabilitation performance has been explored. Data are collected at four time points admission, day 30, day 60, and month 1 as shown in Table 2.

Table 2: Outcome Assessment Instruments and Data-Collection Schedule

Instrument	Domains assessed	Assessment time points
Functional Independence Measure (FIM)	Autonomy; movement; cognitive capacity; self-sufficiency	Admission; day 30; day 60; month 12
Barthel Index	Activities of daily living; personal independence	Admission; day 30; day 60; month 12

2.5. Key performance indicators

Effectiveness is evaluated through a set of clinical, functional, psychological, and social key performance indicators (KPIs), each with defined targets and methods, presented in **Table 3**. The KPI framework is grounded in the classical distinction between the structure, process, and outcome of care [15,16] and in the principle that the central objective of a health service is the value it generates for the patient, defined as outcomes achieved relative to the resources used [17]. The continuous measurement and review of indicators reflects the logic of recognised quality management systems and their emphasis on continual improvement.

Table 3: Key Performance Indicators (Kpis), Targets, and Methods. Targets are Expressed as the Minimum Percentage Change to be Achieved

KPI	Indicator	Target	Method
KPI 1 – Functional recovery	FIM / Barthel scores	FIM increase $\geq 20\%$; autonomy increase $\geq 25\%$	Personalised physiotherapy; occupational therapy; rehabilitation technologies
KPI 2 – Reduction of psychological trauma	PTSD, anxiety, and depression scales	Reduction of traumatic symptoms; improved sleep; better emotional control	Psychotherapy; veteran groups; family support
KPI 3 – Control of addiction	Abstinence; relapse rate; treatment adherence	Relapse reduction $\geq 50\%$; programme completion $\geq 75\%$	Integrated trauma–addiction treatment; continuous monitoring; psychological support
KPI 4 – Therapeutic continuity	Completion of the annual pathway	$\geq 80\%$ of patients complete the annual pathway	Health tutor; scheduled follow-up; family involvement
KPI 5 – Social reintegration	Quality of life; family relationships; social participation	Measurable improvement across indicators	Community activities; social support; territorial programmes
KPI 6 – Occupational reintegration	Productive capacity; economic activity	Recovery of productive capacity; return to economic activity	Involvement of local enterprises through corporate social responsibility programmes

2.6. Project governance

The executive project was developed through the collaboration of specialised companies. Global Trust LLC is responsible for logistical planning, territorial organisation, and operational coordination. Worldwide Industries Ukraine LLC is responsible for healthcare management, clinical pathways, care organisation, quality control, and KPI analysis. The quality-control function applies the documentation, monitoring, and continual-improvement requirements characteristic of formal quality management systems [19].

3. Results and Discussion

Because the programme is a prospective pilot, the outcomes described here represent the anticipated results against which the model will be evaluated using the indicators defined in Table 3. They are presented together with the rationale that links each expected effect to the design of the pathway and to the existing evidence base. At the level of the individual patient, the model is expected to produce greater autonomy, reduced disability, improved control of trauma, the overcoming of addiction, a return to family life, and the recovery of personal dignity. The functional targets are operationalised through the FIM and Barthel Index, whose sensitivity to change in rehabilitation populations supports their use as primary outcome measures [11,13,15]. The psychological targets address the symptom clusters and functional impairments that characterise PTSD in veterans [3,7], while the integrated management of co-occurring substance use follows the evidence that simultaneous treatment of trauma and addiction yields better results than treating either condition in isolation [8,9,10].

At the community level, the model is expected to reduce future healthcare costs, lessen social isolation, increase family stability, and return veterans to productive life. These objectives are consistent with international frameworks that treat veteran reintegration as a matter of community recovery and social cohesion and with psychosocial-support responses developed for the Ukrainian context. Research on the recovery and resilience of military personnel further supports the inclusion of structured social and occupational reintegration as an integral part of clinical rehabilitation rather than an optional add-on.

A distinctive feature of the model is the active involvement of the local economy. Local enterprises become active partners through economic support, employment programmes, training, and professional reintegration; KPI 6 specifically targets occupational reintegration through their corporate social responsibility programmes. In this way, the model reframes rehabilitation from a healthcare cost into a social investment, an interpretation that aligns with value-based conceptions of health care in which the relevant return is measured in patient outcomes and restored social function.

The decision to build the programme around explicit, repeatedly measured indicators distinguishes it from approaches limited to functional recovery alone. By combining validated functional instruments [11,13,14,15], a structure–process–outcome view of quality [16,17], and the continual-improvement logic of formal quality management, the model generates the data needed to determine whether its predefined targets are met and to support its replication. The same indicators allow performance to be benchmarked against uniform data systems used internationally [11] and connect the project to wider efforts to strengthen rehabilitation services in Ukraine.

As a prospective pilot, the project has inherent limitations. No outcome data are yet available, the targets are provisional and will require validation against observed results, and the single-centre design constrains the immediate generalisability of any findings. The use of standardised, integrated treatment protocols for co-occurring trauma and addiction [10] and the consistent application of validated measurement instruments are intended to mitigate these limitations and to make the model transferable to other settings once its results have been confirmed.

4. Conclusion

The pilot project of the Dnipro Region represents an innovative model for responding to the consequences of war. True healing of the veteran does not coincide solely with the closing of a physical wound, but with the recovery of identity, autonomy, and social function. Through a structured twelve-month pathway, validated and repeatedly

measured indicators, integrated treatment of trauma and addiction, and collaboration among institutions, the healthcare system, and the local economy, the model offers a replicable strategy for human and social reconstruction after conflict. Its emphasis on objective measurement positions it not only as a clinical programme but as a framework for generating the evidence required to scale veteran rehabilitation responsibly. To care for the veteran is to rebuild the community.

Data Availability

No outcome data are available at this time, as the project described is a prospective pilot at the design stage. Clinical, functional, psychological, and social data will be collected as outlined in Table 2 and reported in future publications once the twelve-month pathway has been completed and evaluated.

Conflicts of Interest

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper. [To be confirmed by the authors prior to submission.]

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Authors' Contributions

Conceptualization, G.P. and O.D.; Methodology, G.P. and O.D.; Investigation, O.D.; Resources, O.D.; Writing – Original Draft Preparation, G.P.; Writing – Review & Editing, G.P. and O.D.; Project Administration, G.P. [To be confirmed by the authors.]

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