Original Article

DOI: 10.7860/JCDR/2025/80423.22009

Physical Medicine and Rehabilitation Section

Role of National and International Aid Organisations in Disability Rehabilitation in Conflict Areas: A Scoping Review

DOLY BOKALIAL[1], P SWARNA KUMARI[2]

ABSTRACT

Introduction: Disability can result directly from displacement or conflict caused by war-related injuries or trauma, or indirectly from deterioration of medical services. Rehabilitation services alleviate or mitigate limitations that impede functioning, participation and involvement in daily life for People with Disabilities (PwDs). In low-resource settings, where access to healthcare remains a significant challenge, rehabilitation services play a vital role in enhancing Quality of Life (QoL) for PwDs. Various Non Governmental Organisations (NGOs) and international organisations have set up schemes and introduced initiatives to broaden rehabilitation support for PwDs.

Aim: To analyse the contribution of national and international aid organisations in disability rehabilitation in conflict areas.

Materials and Methods: This scoping review followed the PRISMA-ScR guidelines and Arksey and O'Malley's framework. A comprehensive search was performed in three databases from 2010 to February 2025 using the keywords and Boolean operators: ((Disability rehabilitation) AND (Conflict areas) AND (Non Governmental Organisations OR International aid organisations)). Studies were screened for eligibility based on inclusion criteria focusing on rehabilitation programs in conflict zones.

Results: Based on the criteria, a total of 16 studies were included. The studies underscored the importance of integrated, context-specific rehabilitation models that address both physical and psychosocial needs in PwDs in conflict-affected regions. While significant progress has been made in rehabilitation service provision, numerous challenges persist, including accessibility barriers, funding constraints and the need for standardised guidelines.

Conclusion: The review emphasises the importance of integrated and context-specific rehabilitation models that address both physical and psychosocial needs in conflict-affected regions. Moreover, as numerous challenges persist, future research and policy efforts should focus on long-term sustainability, technological integration and inclusive rehabilitation frameworks to improve health outcomes and QoL for affected populations in conflict settings worldwide.

Keywords: Accessibility, Humanitarian, Psychosocial, Sustainability

INTRODUCTION

Disability can result directly from displacement or conflict caused by war-related injuries or trauma, or indirectly from the deterioration of medical services [1]. This trend is most evident among displaced populations, where access to healthcare varies across host nations and may lead to or worsen disability [2]. It is estimated that forced displacement affects around 7.65 million PwDs [3,4], and two-thirds of refugees experience mental disability, while one in six has a physical disability that negatively affects their lives [5]. Accordingly, the World Health Organisation (WHO) estimates that 2.4 billion people would benefit from rehabilitation services [3]. Refugees and asylum seekers with disabilities experience multiple factors of discrimination, resulting in adverse health effects [4]. Some people also have chronic health conditions and pre-existing disabilities, which significantly affect Physical Rehabilitation Services (PRS) [6].

In low-resource settings, where access to healthcare remains a significant challenge, rehabilitation services play a vital role in enhancing QoL for PwDs. Rehabilitation services alleviate or mitigate limitations that impede functioning, participation and involvement in daily life for PwDs [7]. Moreover, disability is influenced by the economic, environmental, cultural and social context in which people live [7]. Hence, providing customised physical rehabilitation programs tailored to specific age groups, along with increased numbers of trained staff to support older PwDs, should be a national priority. To address rehabilitation demands, substantial aid is provided in the form of knowledge, financial and technical resources from NGOs, international donors, as well as community and professional groups [1].

Various NGOs (Handicap International and Islamic Relief) and international organisations such as the WHO and the United Nations International Children's Emergency Fund (UNICEF) have set up schemes and introduced initiatives to broaden rehabilitation support for PwDs [1]. For instance, UNICEF has implemented educational support for 125 children with disabilities in Homs, Syria, fostering their involvement in education along with other school activities [1]. Similarly, for injured Syrians in 2015, WHO allocated financial resources and delivered more than 500 prostheses to strengthen PRS and trauma care in Homs and Damascus [1]. However, especially for war survivors, older people, women and children, physical rehabilitation needs remain unmet despite these essential initiatives [8].

Designing inclusive policies at global and national levels is key to addressing the evolving needs of PwDs [1]. Although international institutions and NGOs have strived to advance rehabilitation services, difficulties in coordination, funding and achieving long-term impact endure. Thus, to inform policy and practice, knowledge about the current rehabilitation landscape, its efficacy, and how to overcome the corresponding challenges is crucial.

A previous study in Sierra Leone highlights the challenges encountered by stakeholders and gaps identified in the provision of rehabilitation services [9]. Moreover, another study identified important obstacles (socio-economic barriers and restricted availability of services) and explored the experiences of PwDs accessing rehabilitation services [7]. Similarly, Jerwanska V et al., assessed the coordination of rehabilitation services and emphasised the necessity for increased collaboration among healthcare providers, government and international organisations [10]. These studies demonstrate the

uncoordinated nature of rehabilitation services and the growing need for a comprehensive review to determine patterns, gaps and strategic interventions. Hence, the present review aimed to analyse the contribution of international aid organisations in disability rehabilitation in conflict areas.

MATERIALS AND METHODS

The methodology for the present review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) and the framework of Tricco AC et al., and Arksey and O'Malley [11,12]. The methodology involved five stages, which are described below [13].

Stage 1: Identification of the Research Question

The purpose of the current review was to determine the role of international aid organisations in disability rehabilitation in conflict areas. Therefore, the research question framed for the review was: What types of disability rehabilitation programs are implemented by international aid organisations and NGOs in conflict-affected areas? The secondary objectives explored were: (1) How effective are these programs in improving functional outcomes and QoL for individuals with disabilities in conflict zones?; (2) What challenges and limitations do international organisations face in delivering disability rehabilitation services in conflict-affected areas?; (3) What are the existing gaps in research regarding disability rehabilitation interventions by international aid organisations in conflict zones?; (4) What policy recommendations can be derived to enhance the effectiveness of international rehabilitation programs in conflict areas?

Stage 2: Identification of Relevant Studies

A comprehensive search was performed using the keywords and Boolean operators on three databases, as shown in [Table/Fig-1]: ScienceDirect, which yielded 1,40,167 articles; PubMed, which reported 3,306 articles; and Google Scholar, which yielded 16,300 articles.

S. No.	Database	Search (Keywords along with Boolean operators)	Articles
1.	ScienceDirect	(((Disability rehabilitation) AND (Conflict areas)) AND (Non-government organisations)) OR (International aid organisations)	1,40,167
2.	PubMed	(((Disability rehabilitation) AND (Conflict areas)) AND (Non-government organisations)) OR (International aid organisations)	3,306
3.	Google Scholar	(((Disability rehabilitation) AND (Conflict areas)) AND (Non-government organisations)) OR (International aid organisations)	16,300

[Table/Fig-1]: Comprehensive search on databases by utilising keywords along with Boolean operators.

Stage 3: Selection of Studies

Inclusion criteria: Studies focusing on the role of international aid organisations in disability rehabilitation in conflict areas. Eligible studies included cross-sectional, observational, retrospective studies, case studies and randomised controlled trials (RCTs) published between 2010 and February 2025 in English with full-text access, reflecting contemporary rehabilitation strategies, capturing recent conflicts and humanitarian responses, reflecting modern rehabilitation approaches and maintaining methodological rigour and data availability. **Exclusion criteria:** Protocols editorials, other study designs and studies lacking full-text availability or relevant knowledge on the topic. Moreover, the Population, Concept and Context (PCC) framework for the review was: P=individuals with disabilities in conflict-affected areas; C=disability rehabilitation programs provided by international aid organisations and NGOs and their effectiveness; and C=conflict zones and post-conflict settings.

Two reviewers independently screened titles and abstracts to remove duplicates and irrelevant studies. Selected articles were then reassessed for eligibility based on full-text availability. Discrepancies were resolved through discussion with the third reviewer.

Stage 4: Data Charting

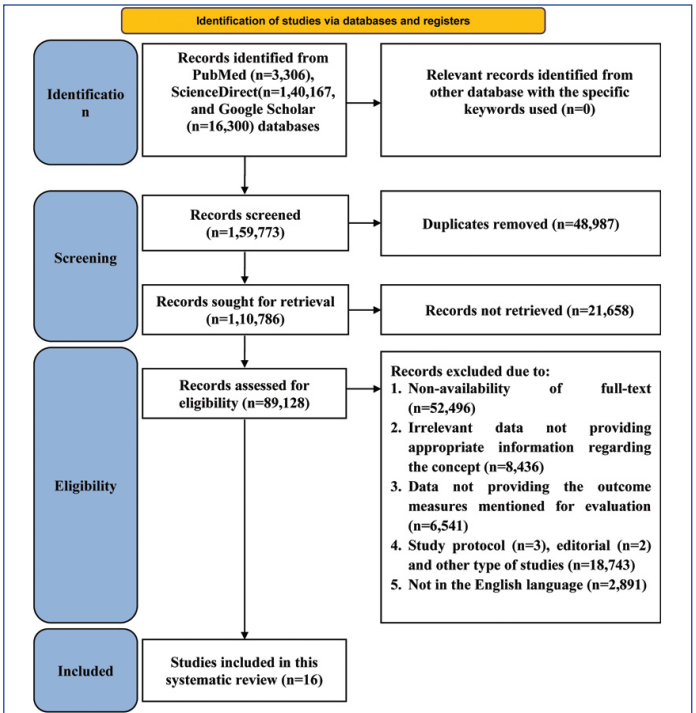
The data extracted from the studies included demographic characteristics of the study sample (authors, year, study design, location and population), description of the rehabilitation intervention, reported outcomes and effectiveness, identified challenges and limitations, and policy implications and recommendations.

Stage 5: Collating, Summarising and Reporting the Outcomes

A critical narrative synthesis was used to synthesise findings using text, tables and figures to summarise and validate outcomes. The results provided a comprehensive overview of rehabilitation programs in conflict-affected regions, identified effective strategies and persistent barriers and offered policy recommendations for improvements and directions for future research.

RESULTS

Initially, a total of 159,773 articles were identified from January 2010 to February 2025 using the specified keywords. After removing 48,987 duplicates, 110,786 records remained for screening. Of these, 21,658 were excluded based on title and abstract screening. The remaining 89,128 records were assessed for eligibility, of which 89,112 were excluded for reasons including: lack of full text (n=52,496), irrelevant data (n=8,436), absence of the specified outcome measures (n=6,541), study protocols (n=3), editorials (n=2), other study types (n=18,743), and language not in English (n=2,891). Consequently, 16 studies fulfilled the eligibility criteria and were included in the review. The PRISMA flow diagram is presented in [Table/Fig-2]. The characteristics of the included studies are shown in [Table/Fig-3] [3,7,10,14-26].



[Table/Fig-2]: PRISMA flowchart illustrating search strategy.

Furthermore, the contribution of international aid organisations in disability rehabilitation in conflict areas is reported in [Table/Fig-4], along with the challenges and limitations faced by international organisations, gaps in the literature and recommendations for future research and policy development [3,7,10,14-26].

S. No.	Author	Year	Study design	Study setting	Study population
1.	Amini E et al., [3]	2024	Qualitative study employing semi-structured interviews	Iran (encompassing various provinces including Tehran, Isfahan, Fars, Sistan and Baluchistan, and Khorasan Razavi)	Afghan immigrants and refugees with disabilities, as well as rehabilitation service providers such as physiotherapists, occupational therapists, prosthetists/ orthotists, audiologists, and optometrists.
2.	Aenishänslin J et al., [7]	2022	Qualitative study	Sierra Leone's healthcare system	Individuals with physical disabilities accessing rehabilitation services.
3.	Jerwanska V et al., [10]	2023	Qualitative study	Sierra Leone	Stakeholders from health, rehabilitation, and disability organisations.
4.	Higashida M et al., [14]	2017	Mixed-methods study (quantitative and qualitative)	Post-conflict regions of Sri Lanka	Individuals with disabilities receiving CBR services.
5.	Trani JF et al., [15]	2021	Longitudinal study	Afghanistan	1,861 individuals with disabilities newly enrolled in the CBR program from 169 villages (recruited between July 2012 and December 2013) were involved in the intervention group whereas, 1,132 individuals with disabilities randomly selected from 6,000 households in 100 villages within the same provinces but outside the CBR program's catchment area were included in the control group.
6.	Barth CA et al., [16]	2020	Retrospective observational study	31 rehabilitation centres across 14 conflict-affected countries and territories (Data from 1988 to 2018)	287,274 service users with largest proportion from Afghanistan (61.6%) and Cambodia (15.7%).
7.	Issa F and Zarka S, [17]	2016	Case study	Syria	12-year-old Syrian shepherd.
8.	Young SS et al., [18]	2016	Mixed-methods (qualitative interviews and quantitative surveys)	Two hospitals located in northern Israel	20 Israeli HCPs from diverse ethnic and religious backgrounds and three Syrian male caregivers of child patients.
9.	Ertl V et al., [19]	2011	RCT	Community-based setting in Northern Uganda	Former child soldiers in Northern Uganda who had experienced war-related trauma.
10.	Chikovani I et al., [20]	2015	Cross-sectional household survey	Georgia, among conflict-affected communities	Conflict-affected individuals in Georgia, assessing their utilisation of health services for mental, behavioural, and emotional problems.
11.	Knaevelsrud C et al., [21]	2015	RCT	Web-based/ online psychotherapy intervention	War-traumatised Arab patients with PTSD.
12.	Barth CA et al., [22]	2021	Retrospective observational study	ICRC rehabilitation centres in five conflict and post-conflict countries (Afghanistan, Cambodia, Iraq, Myanmar, Sudan)	Persons with amputations accessing ICRC rehabilitation centres
13.	Abou-Abbas L et al., [23]	2024	Mixed-method study	Humanitarian physical rehabilitation program in Lebanon	Women and girls with disabilities using the rehabilitation program in Lebanon
14.	Wang SJ et al., [24]	2016	Pilot RCT	Post-conflict context in Kosovo	Traumatised victims of torture and war in Kosovo
15.	Andersen I et al., [25]	2023	Retrospective cohort study	Eastern Democratic Republic of Congo	The study assessed 132 Physical Rehabilitation Service (PRS) users who were affected by physical disabilities and exposure to violence in a conflict setting.
16.	Nilsson H et al., [26]	2019	Qualitative study using focus group discussion	Sweden	Trauma-afflicted refugees who participated in physical activity and exercise treatment programs.

[Table/Fig-3]: Demographic characteristics of the incorporated studies [3,7,10,14-26].
CBR: Community-based rehabilitation; HCPs: Healthcare providers; RCT: Randomised controlled trial; PTSD: Post-traumatic stress disorder; ICRC: International Committee of the Red Cross

Synthesis of findings

A word cloud visualises key terms associated with the results, highlighting frequent concepts as shown in [Table/Fig-5].

Types of rehabilitation provided by international organisations: Studies included in the review highlighted various rehabilitation interventions offered by international aid organisations in conflict-affected regions. Physical rehabilitation included prosthetic and orthotic services, physiotherapy, and mobility training for individuals with war-related injuries, amputations, and spinal cord injuries. Occupational therapy supported daily functional activities to promote independence, particularly among those with traumatic brain injuries and limb loss. Psychosocial rehabilitation and mental health interventions aimed to address depression, Post-Traumatic Stress Disorder (PTSD), social reintegration, and anxiety. Community-Based Rehabilitation (CBR) involved efforts to integrate persons with disabilities into their communities through vocational training, peer support programs, and livelihood initiatives. Telerehabilitation, as some organisations leveraged telehealth technologies to provide remote physiotherapy and mental health counselling, particularly in areas with restricted physical access [3,7,10,14-26].

Sr. No.	Author	Year	Conflict area	Organisation	Type of rehabilitation	Effectiveness of rehabilitation	Challenges and limitations faced by international organisations	Gaps in the literature and recommendations for future research and policy development
1.	Amini E et al., [3]	2024	Iran	Governmental and Non Governmental Organisations (NGO)	Physical rehabilitation aimed at assisting individuals with disabilities to improve their physical functions and QOL.	NA	Financial constraints (Insufficient insurance coverage and high out-of-pocket expenses for services, transportation and accommodation hinder access to PRS), lack of information (Limited knowledge about Iran's healthcare system and available rehabilitation services prevents individuals from seeking necessary care), geographical barriers (Restricted access to PRS in remote areas poses significant challenges for those residing outside urban centres), provider-related issues (Instances of impatience and inadequate communication from healthcare providers discourage individuals from utilising services), legal and social fears (Fear of arrest and deportation, coupled with stringent immigration policies, deter individuals from accessing healthcare facilities), and cultural beliefs (A lack of trust in modern medical treatments leads some to prefer traditional remedies over formal rehabilitation services).	Enhancing financial support (Strengthening insurance coverage, increasing public funding and leveraging resources from charities and NGOs can alleviate financial burdens), improving information dissemination (Providing accurate information about available services and eligibility criteria can empower individuals to seek care), cultural integration (Facilitating cultural assimilation and addressing language barriers through the use of interpreters can improve communication between providers and patients), training healthcare providers (Educating practitioners on the specific needs and cultural backgrounds of immigrants can enhance patient-provider interactions), and policy reforms (Conducting comprehensive needs assessments, clarifying legal entitlements and promoting interdepartmental collaboration can create a more inclusive healthcare environment).
2.	Aenishänslin J et al., [7]	2022	Sierra Leone	Sierra Leone's healthcare system	Physical rehabilitation (physiotherapy, provision of assistive devices and other related interventions)	Participants reported both struggles and opportunities associated with rehabilitation services. While some experienced improvements in mobility and daily functioning, others faced ongoing challenges due to limited access and availability of services.	Financial constraints (High costs of rehabilitation services and transportation impede access for many individuals), limited availability (Rehabilitation centres often lack necessary assistive devices and materials, hindering effective service delivery), stigma and discrimination (Individuals with disabilities frequently encounter societal stigma, affecting their willingness and ability to seek rehabilitation), and knowledge gaps (There is a widespread lack of awareness about available rehabilitation services among the population).	Financial support (Implementing funding mechanisms to subsidise rehabilitation costs and transportation), resource allocation (Ensuring rehabilitation centres are equipped with necessary devices and materials), community education (Conducting health promotion initiatives to raise awareness about rehabilitation services and combat stigma), and policy prioritisation (Developing a national priority list to enhance coordination and availability of rehabilitation services).
3.	Jerwanska V et al., [10]	2023	Sierra Leone	Government agencies, NGOs and international aid organisations	Medical rehabilitation (e.g., physiotherapy, occupational therapy), CBR, assistive devices and prosthetic services and social and vocational rehabilitation.	Improved mobility, QOL and social interaction. Additionally, increased employment due to the use of prosthetic devices.	Weak communication and collaboration among rehabilitation providers, government agencies, and international aid organisation, limited human resources (Shortage of trained rehabilitation professional such as physiotherapists, occupational therapists, prosthetists), limited funding and dependency on foreign aid making services unsustainable, geographical barriers (Many rehabilitation centres are located in urban areas making access difficult for people in rural regions), and lack of policy implementation (Policies on disability rights and rehabilitation exist but are not fully implemented due to weak governance).	Limited research on long-term rehabilitation outcomes, lack of studies on patient perspective, and few policy evaluations on the integration of rehabilitation into national health systems. The recommendations involve strengthening policy implementation, workforce development, improving coordination between stakeholders, expanding CBR (especially in rural areas) and reducing dependency on foreign aid by establishing sustainable funding mechanisms for rehabilitation services.
4.	Higashida M et al., [14]	2017	Sri Lanka	Vanni Rehabilitation Organisation for the Differently-Abled (VAROD)	Medical support, physiotherapy, assistive devices, livelihood support, and psychosocial programs.	Improved functional outcomes, socioeconomic conditions and QOL.	Aid dependency (Some participants developed expectations of financial aid without demonstrating self-help initiatives, leading to dependency), selective participation (Individuals with disabilities were less likely to engage in activities if financial benefits were absent), inclusivity concerns (The predominance of war-related disabilities among participants may have resulted in the underrepresentation of individuals with intellectual and psychiatric disabilities unrelated to the conflict).	Empowerment and inequality (Future initiatives should concurrently focus on empowering individuals with disabilities and addressing socio-economic inequalities to prevent aid dependency), inclusive participation (Strategies are needed to encourage the involvement of individuals with various types of disabilities, including intellectual and psychiatric, to ensure comprehensive community rehabilitation), and sustainable livelihoods (Research should explore sustainable livelihood models that promote self-reliance among individuals with disabilities in post-conflict settings).

5.	Trani JF et al., [15]	2021	Afghanistan	WHO	CBR (Physiotherapy, group training, loans, home based education, centre-based education; inclusion in school; home based training, community advocacy and disability awareness).	Enhanced mobility, ADLs, communication skills, social participation, emotional wellbeing, and employment.	Self-selection bias (Elderly individuals and those with multiple disabilities were less likely to participate in the program), information bias (Data collection by CBR workers may have introduced social desirability bias), program contamination (Some control participants accessed services, potentially underestimating the program's impact), non random selection (The selection of catchment areas was not random, which could affect the generalisability of results).	Standardisation of CBR practices (Developing standardised procedures to enhance the effectiveness and comparability of CBR programs), process evaluation (Conducting mixed-methods research to understand the mechanisms leading to effective CBR interventions), sustainability (Exploring strategies to ensure the long-term sustainability of CBR programs, especially in conflict-affected regions), and community involvement (Enhancing community participation to improve program relevance and ownership).
6.	Barth CA et al., [16]	2020	The research encompasses data from 14 countries and territories impacted by conflict: Afghanistan, Algeria, Cambodia, Democratic Republic of the Congo, Ethiopia, Gaza Strip, Iraq, Myanmar, Niger, Pakistan, Somalia, Sudan, Syrian Arab Republic, and Togo.	ICRC	Physical rehabilitation programme (Assistive technology provision (e.g., prosthetics and orthotics) and physiotherapy, psychosocial support, disability sports, and educational or professional reintegration services).	NA	Gender disparities (A significantly lower attendance of females at rehabilitation centres highlights potential barriers to access for women and girls in conflict settings), data collection variability (Differences in data collection processes and completeness across centres may affect the generalisability of findings), and resource constraints (Providing consistent rehabilitation services in conflict zones is challenging due to limited resources, security concerns and disrupted health systems).	Understanding gender barriers (Further research is needed to identify factors affecting the accessibility and acceptability of rehabilitation services for women and girls in conflict-affected areas), standardised data collection (Implementing uniform data collection methods across rehabilitation centres can enhance the reliability of research findings), integration into health systems (Policies should focus on integrating rehabilitation services into broader health systems to ensure sustainability and comprehensive care in post-conflict recovery efforts).
7.	Issa and Zarka S, [17]	2016	Syria	Ziv Medical Centre, located in Safed, Israel	Emergency medical treatment, necessary surgical procedures, psychosocial support and multidisciplinary care (holistic treatment).	Improved patient outcomes and recovery.	Security concerns (Providing medical care in a conflict zone poses significant security risks for medical personnel and patients), resource constraint (Limited resources and funding can hinder the ability to offer comprehensive care), cultural and language barriers (Differences in language and culture between medical staff and patients can affect communication and care delivery) and political sensitivities (Humanitarian efforts in conflict zones may be complicated by political dynamics and perceptions).	Longitudinal studies (There is a need for long-term studies to assess the sustained impact of medical interventions on war-injured patients), mental health focus (Further research on effective mental health interventions for war-affected populations is essential), cross-border collaboration (Studies exploring the benefits and challenges of cross-border medical aid can inform policy and improve service delivery) and training programs (Developing training programs for medical personnel on managing war-related injuries and trauma can enhance care quality).
8.	Young SS et al., [18]	2016	Syria and Israel cross-border	Israeli hospitals and healthcare providers	Emergency trauma care, surgical interventions, physical and psychological rehabilitation for injured patients, emotional and psychological support for patients and their caregivers.	Physical recovery from traumatic injuries and psychosocial enhancement.	Language barriers (Many Syrian patients and their caregivers spoke only Arabic, while most Israeli healthcare workers spoke Hebrew or English), cultural differences (Variations in social norms, gender dynamics, and trust in medical systems created challenges), ethical and political sensitivities (Some Israeli healthcare providers faced moral dilemmas when treating individuals from a country considered an enemy state), resource allocation (Hospitals had to manage resource distribution carefully, balancing care for local and international patients), and uncertain follow-up care (Many patients returned to Syria after receiving care, limiting long-term follow-up and rehabilitation).	Long-term outcomes (More research is needed on the long-term physical and psychological outcomes of patients treated in cross-border medical programs), mental health interventions (Further studies should explore effective models for addressing PTSD and war-related psychological trauma), ethical considerations (Research should focus on the ethical dilemmas faced by healthcare providers working in conflict zones), policy development (Studies should explore how international healthcare organisations can improve cross-border medical collaborations in war-affected regions) and training programs (The development of training programs for healthcare workers on cultural competency and conflict-sensitive care is necessary).

9.	Ertl V et al., [19]	2011	Northern Uganda	NA (Mainly executed by rained local lay therapists)	NET (a short-term, trauma-focused treatment designed for individuals exposed to multiple traumatic events). NET was compared to an academic catch-up program with supportive counselling elements and a waiting-list control group.	Participants receiving NET exhibited a significant reduction in PTSD symptom severity compared to those in the academic catch-up and waiting-list groups. NET also demonstrated positive effects on depression symptoms, suicidal ideation, feelings of guilt and perceived stigmatisation.	Resource constraints (Implementing mental health interventions in low-resource settings necessitates cost-effective and scalable treatments), training and supervision (Ensuring that local lay therapists are adequately trained and supervised is critical for maintaining treatment fidelity and effectiveness) and cultural sensitivity (Tailoring interventions to align with local cultural contexts and addressing potential stigma associated with mental health treatment are essential).	Long-term outcomes (Investigating the sustainability of treatment effects over extended periods is necessary to understand the enduring impact of interventions), comparative studies (Comparing NET with other therapeutic approaches can help determine the most effective treatments for PTSD in similar contexts), and implementation strategies (Exploring methods to integrate evidence-based mental health interventions into existing community structures and health systems can enhance accessibility and scalability).
10.	Chikovani I et al., [20]	2015	Georgia	Wellcome Trust (a global charitable foundation)	Mental health rehabilitation, pharmacotherapy, counselling, psychotherapy, and psychosocial support.	NA	Financial barriers (High costs of services and medications deter individuals from seeking care), limited access to specialised care (Underutilisation of psychiatric services indicates a gap in specialised mental health-care availability), over-reliance on pharmacotherapy (The predominance of medication over counselling or psychotherapy suggests a lack of comprehensive treatment approaches), and stigma and awareness (A significant portion of individuals did not recognise the need for professional help, indicating issues related to mental health awareness and stigma).	Integration of mental health services (Incorporating mental health care into primary health-care systems to improve accessibility), financial support mechanisms (Implementing policies to reduce the cost burden of mental health services and medication), awareness campaigns (Educating the population to reduce stigma and encourage individuals to seek necessary care), comprehensive treatment approaches (Promoting the use of counselling and psychotherapy alongside pharmacotherapy to address mental health issues holistically).
11.	Knaevelsrud C et al., [21]	2015	Iraq	Freie University Berlin, the University of Amsterdam, VU University Amsterdam, and Medical School Berlin.	Internet-based CBT intervention.	The treatment group exhibited significant reductions in PTSD symptoms compared to the control group.	High attrition rates (A 41% dropout rate was observed, potentially due to ongoing violence and economic instability diverting attention to immediate needs), technical issues (Participants faced problems like unreliable Internet connections and power outages, common in conflict zones), trust concerns (Some participants were skeptical about the program's neutrality, fearing associations with foreign intelligence agencies), and cultural sensitivity (The intervention had to be adapted to respect cultural norms, such as the authoritative role of healthcare professionals and the stigma surrounding mental health issues).	Diverse treatment modalities (Exploring alternative delivery methods, such as mobile applications, to overcome technical barriers), addressing co-morbidities (Investigating treatments for other prevalent conditions like depression, which often co-occur with PTSD), engaging underrepresented groups (Developing strategies to include less-educated individuals and address gender disparities in treatment participation), and long-term efficacy studies (Conducting research to assess the sustainability of treatment effects over extended periods).
12.	Barth CA et al., [22]	2021	Afghanistan, Democratic Republic of the Congo (DRC), Myanmar, Sudan, and Yemen	ICRC	Prosthetic and orthotic rehabilitation services, prosthetic limb fitting, physiotherapy, and mobility training.	NA	Limited access and infrastructure (Many conflict zones lack proper healthcare infrastructure, making rehabilitation services scarce and difficult to access, and travel restrictions due to ongoing violence further limit access), resource constraints (Shortages in funding and skilled personnel hinder the expansion of rehabilitation services, and the demand for prosthetic limbs often exceeds supply, leading to long waiting times for patients), sociocultural barriers (Stigma around disabilities and limited awareness of available rehabilitation services prevent some individuals from seeking care, and women and children often face additional barriers to accessing rehabilitation), and continuity of care issues (Many patients require lifelong prosthetic maintenance and physiotherapy, but ongoing conflict disrupts long-term follow-up and support, and a lack of local rehabilitation professionals limits sustainability once international aid organisations leave).	Long-term rehabilitation outcomes (Future research should track long-term functional outcomes of individuals receiving prosthetic rehabilitation, and studies should evaluate the impact of rehabilitation on QOL, social reintegration, and employment), women and children in rehabilitation (There is a need for more research focusing on female amputees and child beneficiaries, as they face unique barriers, and policies should focus on gender-inclusive rehabilitation programs), psychosocial and mental health support (Rehabilitation should include mental health interventions to address PTSD and psychological distress associated with amputation, and future studies should explore the role of community-based mental health programs alongside physical rehabilitation), and sustainable local capacity building (Training and investing in local prosthetists, physiotherapists and rehabilitation professionals will improve service continuity, and future policies should promote integration of rehabilitation services within national healthcare systems)

13.	Abou-Abbas L et al., [23]	2024	Lebanon	ICRC	ICRC's physical rehabilitation program services such as prosthetic and orthotic devices, physiotherapy, and mobility training	NA	Societal norms (Cultural expectations often prioritise men's health needs over women's, limiting women's autonomy in seeking care, safety concerns (Women may face risks when travelling alone to healthcare facilities, deterring them from accessing services), economic disparities (Financial constraints disproportionately affect women, making it difficult for them to afford transportation and treatment costs), preference for female providers (In contexts where female healthcare providers are scarce, women may avoid seeking care due to cultural preferences for same-gender providers), and need for privacy (Concerns about privacy during medical consultations can deter women from accessing rehabilitation services).	Inclusive program design (Expand admission criteria to include disabilities not solely related to trauma, which may disproportionately affect women and girls), workforce training (Increase the recruitment and training of female rehabilitation professionals to accommodate cultural preferences), community engagement (Implement educational programs to raise awareness among women with disabilities and their families, promoting positive attitudes toward healthcare-seeking behaviour), and policy integration (Integrate rehabilitation services into primary healthcare to make them more accessible and reduce stigma).
14.	Wang SJ et al., [24]	2016	Kosovo	Collaborative effort between the Danish Institute against Torture (DIGNITY) and the Kosova Rehabilitation Centre for Torture Victims (KRCT)	CBT, Biofeedback-assisted breathing exercises (emWave biofeedback device), and group physiotherapy	PTSD reduction, notable improvement in handgrip strength, employment and income rises, and emotional wellbeing as slight reduction in feelings of anger and hatred was reported.	Contextual sensitivity (The effectiveness of interventions was influenced by the post-war economic conditions in Kosovo), Treatment integrity (Ensuring consistent delivery of the multidisciplinary approach was challenging), data reliability (Maintaining accurate and reliable data collection in a post-conflict setting posed difficulties), and sustainability (Providing ongoing social support post-intervention, such as job-finding assistance and community-based activities, was necessary to prevent symptom recurrence).	Comprehensive outcome measures (Future studies should include assessment of employment, income, QOL, and coping mechanisms alongside traditional health outcomes), larger scale trials (Conducting studies with larger sample sizes to validate findings and enhance statistical power), monitoring and evaluation (Implementing rigourous monitoring of treatment delivery and data collection to ensure fidelity and accuracy), and continued support (Establishing long-term support systems, including occupational training and microcredit provision, to aid in the sustainable rehabilitation of trauma victims).
15.	Andersen I et al., [25]	2023	Eastern Democratic Republic of Congo	ICRC in collaboration with local partners such as Shirika la Umoja and HeriKwetu	Integration of MHPSS into Physical Rehabilitation Services (PRS)	All participants experienced reductions in depression, stress symptoms, anxiety and improved daily functioning.	Amputation (Significantly linked to elevated depression, anxiety and stress), exposure to violence (Witnessing violence predicted higher stress symptoms), and lack of social support.	Exploring the long-term effects of combined physical and psychosocial rehabilitation interventions, investigating the specific needs of subgroups, such as those with amputation or those exposed to severe violence, and developing strategies to enhance social support networks for individuals undergoing rehabilitation.
16.	Nilsson H et al., [26]	2019	NA (The study focuses on trauma-afflicted refugees who have experienced conflicts in their home countries before resettling in Sweden)	Swedish RCC for persons affected by war and torture in Malmö	Psychotherapy, physiotherapy, medical treatment, and social counselling. Warm-water pool training, aerobics classes, yoga, gym training, ball sport activities, basic body awareness training and tension and trauma releasing exercises	Physical and psychosocial benefits from engaging in physical activity, Exercise provided stress relief, improved mood, and enhanced social interaction. Many refugees found that exercise helped them cope with trauma and improved their sense of control over their bodies.	Cultural and language barriers hinder effective communication between refugees and rehabilitation providers, lack of awareness or trust in Western rehabilitation methods among some refugees, psychological distress and past trauma make it difficult for some participants to engage fully in rehabilitation programs, limited access to structured physical activity programs specifically designed for refugees, and socioeconomic constraints, including transportation costs and availability of time for exercise.	Need for longitudinal studies to assess the long-term impact of exercise-based interventions for refugees, further exploration of gender differences in how refugees experience physical activity rehabilitation, developing culturally tailored rehabilitation programs that align with refugees' backgrounds and beliefs, more research on the integration of mental health and physical rehabilitation, ensuring that interventions address both trauma and physical wellbeing and policy recommendations (Governments and NGOs should incorporate structured exercise programs as part of refugee rehabilitation services and ensure accessibility for all).

[Table/Fig-4]: Summary of the included studies [3,7,10,14-26].

NGOs: Non-governmental organisations; CBR: Community-based rehabilitation; QOL: Quality of life; WHO: World health organisation; ADLs: Activities of daily living; PTSD: Post-traumatic stress disorder; ICRC: International Committee of the Red Cross; NET: Narrative exposure therapy; CBT: Cognitive behavioural therapy; NA: Not available; RCC: Red cross treatment centre; MHPSS: Mental health and psychosocial support

[Table/Fig-5]: Word cloud of key terms from the synthesis of findings.

Effectiveness of rehabilitation interventions: Findings demonstrated varying degrees of effectiveness of rehabilitation programs, with improvements in mobility, strength, and activities of daily living among individuals receiving physiotherapy and prosthetic rehabilitation. Psychosocial rehabilitation programs effectively reduced symptoms of PTSD and depression, contributing to better social reintegration. However, long-term sustainability issues were observed due to funding constraints and a lack of local expertise. Moreover, integrated approaches combining physical, psychological, and CBR yielded the most comprehensive and lasting outcomes [3,7,10,14-26].

Challenges and limitations faced by international aid organisations: Despite their significant contributions, international organisations encountered several obstacles, including logistical and security challenges arising from ongoing conflict, unstable political environments, and restricted access to affected populations, which posed major difficulties in service delivery. Financial constraints, such as limited funding and short-term donor commitments, restricted the ability to implement long-term rehabilitation programs. Cultural and social barriers, such as resistance from local communities, stigmatisation of disabilities, and differing cultural perceptions of rehabilitation, hindered effective intervention uptake. Workforce shortages, including the scarcity of trained rehabilitation professionals in conflict-affected areas and a reliance on foreign aid workers, highlighted sustainability issues. Finally, a lack of coordinated efforts—such as the absence of standardised rehabilitation protocols and limited collaboration among international organisations, governments, and local healthcare providers—led to fragmentation of services [3,7,10,14-26].

DISCUSSION

The present review provides an elaborated synthesis of the current literature related to the contribution of international aid organisations in disability rehabilitation in conflict areas. The included studies reported different approaches to rehabilitation, including community-based interventions, psychosocial support, and physical rehabilitation. The review highlights challenges in conflict-affected regions, including the effectiveness, affordability, and accessibility of rehabilitation services. It also identifies gaps in funding provisions, long-term sustainability, and policy implementation for rehabilitation programs. The findings underscore the need for a collaborative and interdisciplinary framework for rehabilitation that takes into account the economic and socio-cultural factors affecting PwDs in conflict-affected settings.

A study by Aenishänslin J et al., (2022) reported the experiences of PwDs in Sierra Leone regarding the use and access to rehabilitation services. The study emphasised that ongoing efforts in transportation, financial support and low-cost models are essential to address affordability barriers to rehabilitation. Hence, to improve coordination and availability of rehabilitation services and to enhance community awareness, each country should develop a national priority list. Community-Based Rehabilitation (CBR) and health promotion programs should be implemented to overcome stigma and discriminatory beliefs against PwDs [7].

Similarly, Jerwanska V et al., (2023) stated that for long-term rehabilitation and health services, trust and collaboration between public programs, NGOs, and donors are crucial, along with government commitment, for nationwide stakeholders to ensure equitable access to health and rehabilitation services. Moreover, greater political prioritisation of PwDs is essential for accessibility and expanding coverage [10].

Additionally, Higashida M et al., (2017) highlighted the effectiveness of CBR for PwDs in Sri Lanka's war-affected Northern Province while noting restrictions such as aid dependency and financial expectations. The study also focused on the necessity to simultaneously address socioeconomic inequality and disability empowerment [14].

Ertl V et al., (2011) reported the effectiveness of a CBR program in reducing PTSD symptoms among formerly abducted Ugandan child soldiers [19].

Similarly, Trani JF et al., (2021) found improved rehabilitation outcomes and overall well-being among PwDs in conflict settings in Afghanistan through CBR programs, regardless of impairment or background [15].

Barth CA et al., (2020) analysed demographic and clinical data from physical rehabilitation centers supported by the ICRC in conflict zones, highlighting the significantly lower attendance of females and the need to address barriers to rehabilitation access for women and girls [16].

Young SS et al., (2016) explored the influence of Israel and Syria's geopolitical and social history on healthcare providers and Syrian patient caregivers in northern Israel, emphasising the role of psychological, contextual, and relational factors in fostering empathy and addressing ethical and humanitarian challenges in healthcare [18].

Chikovani I et al., (2015) examined health-care utilisation for mental health issues among war-affected adults in Georgia, underscoring the importance of reducing financial barriers and increasing awareness to improve access to local mental-health care [20].

Knaevelsrud C et al., (2015) assessed the effectiveness of an Internet-based cognitive-behavioural intervention for war-traumatised Arab patients, particularly in Iraq, and found that even in unstable environments with ongoing human rights violations, individuals with PTSD symptoms benefit from online cognitive-behavioural therapy. This approach enhances access to e-mental health services as humanitarian aid [21].

Similarly, Barth CA et al., (2021) analysed amputation demographics and rehabilitation access in five conflict and post-conflict countries, revealing that the young age of amputees reflects the severe impact of war and weak health systems. Significant delays in rehabilitation highlight the gap between needs and resources, posing a challenge for service providers managing diverse patient populations. The study emphasises the need for stronger integration between primary care, surgical, and rehabilitation services, along with prioritising rehabilitation and increasing resource allocation to ensure comprehensive care for amputees [22].

Abou-Abbas L et al., (2024) highlighted the barriers limiting healthcare access for women and girls with disabilities in Lebanon, emphasising the need for gender-specific interventions to address societal norms and safety concerns. The study calls for stakeholder collaboration to bridge healthcare gaps [23].

Wang SJ et al., (2017) assessed multidisciplinary interventions for torture and war victims in Kosovo, revealing the potential of bio-psycho-social approaches to enhance emotional well-being

and employment outcomes, though further large-scale trials are needed [24].

Amini E et al., (2024) examined factors influencing PRS utilisation among Afghan immigrants and refugees with disabilities in Iran, stressing the importance of targeted policies to improve access and health outcomes [3].

Moreover, Andersen I et al., (2023) emphasised the importance of integrating mental health and psychosocial support (MHPSS) into physical rehabilitation in conflict settings, highlighting the compounded impact of disability and violence. Peer support emerged as a crucial component, particularly for individuals lacking social support, who reported significant reductions in depression symptoms post-MHPSS [25].

However, Nilsson H et al., (2019) examined trauma-afflicted refugees' experiences with physical activity-based treatment, underscoring the need for research and interventions that consider real-life impacts and participant preferences [26]. A key strength of this scoping review is its broad overview of rehabilitation efforts by various national and international aid organisations in conflict-affected regions.

Limitation(s)

However, limitations include the predominance of short-term outcomes, with limited longitudinal data and a lack of research on long-term rehabilitation effectiveness. There is scarce research on local capacity building, and minimal evidence on strategies to empower local healthcare providers for sustainable rehabilitation efforts. There is a lack of standardised outcome measures, making it difficult to compare effectiveness across interventions, and there is underrepresentation of mental health interventions, with fewer comprehensive studies on mental-health rehabilitation in conflict zones compared with physical rehabilitation. Additionally, publication bias may be present, since scholarly work from low-resource areas may not be fully reflected in indexed research platforms. The methodologies and designs of the included studies varied widely, thus limiting the generalisability of findings. Furthermore, the review included only open-access articles and studies published in English, which led to the exclusion of relevant studies published in other languages.

Recommendations for future research and policy development: Future research should focus on tracking rehabilitation outcomes over extended periods to assess the long-term efficacy of rehabilitation services. Investigations comparing different rehabilitation modalities for specific populations to analyse which intervention is most impactful. Studies evaluating the effectiveness of mobile health applications and telerehabilitation interventions in resource-limited settings. Moreover, policy evaluation should be undertaken to determine strategies to enhance the sustainability and accessibility of rehabilitation services. Designing comprehensive international rehabilitation standards for war-affected populations can enhance service alignment and quality. To ensure sustainability, policymakers and international bodies must incorporate rehabilitation within comprehensive healthcare structures. To ensure continuity of care beyond the presence of international aid, policies should focus on upgrading local healthcare workers. Furthermore, resources should be allocated to advancing research and funding for comprehensive rehabilitation models that address both mental and physical health.

CONCLUSION(S)

The present review provides a comprehensive synthesis of the current literature on the contribution of international aid organisations to disability rehabilitation in conflict areas. The review underscores the importance of integrated, context-specific rehabilitation models that address both physical and psychosocial needs. While significant progress has been made in rehabilitation service provision, numerous challenges persist, including accessibility barriers, funding constraints, and the need for standardised guidelines. Future research and policy efforts should focus on long-term sustainability, technological integration, and inclusive rehabilitation frameworks to improve health outcomes and QoL for affected populations in conflict settings worldwide.

REFERENCES

[1] Shahabi S, Skempes D, Pardhan S, Jalali M, Mojgani P, Lankarani KB. Nine years of war and internal conflicts in Syria: A call for physical rehabilitation services. Disability & Society. 2021;36(3):508-12. Available from: https://doi.org/10.1080/09687599.2021.1888283.

[2] Boggs D, Atijosan-Ayodele O, Yonso H, Scherer N, O'Fallon T, Deniz G, et al. Musculoskeletal impairment among Syrian refugees living in Sultanbeyli, Turkey: Prevalence, cause, diagnosis and need for related services and assistive products. Confl Health. 2021;15:01-04. Available from: https://doi.org/10.1186/s13031-021-00362-9.

[3] Amini E, Etemadi M, Shahabi S, Barth CA, Honarmandi F, Karami Rad M, et al. Barriers and enabling factors for utilizing physical rehabilitation services by Afghan immigrants and refugees with disabilities in Iran: A qualitative study. BMC Public Health. 2024;24(1):893. Available from: https://doi.org/10.1186/s12889-024-18374-4.

[4] Tofani M, Iorio S, Berardi A, Galeoto G, Conte A, Fabbrini G, et al. Disability, rehabilitation, and assistive technologies for refugees and asylum seekers in italy: Policies and challenges. Societies. 2023;13(3):63. Available from: https://doi.org/10.3390/soc13030063.

[5] Burnett A, Peel M. Health needs of asylum seekers and refugees. BMJ. 2001;322(7285):544. Available from: https://doi.org/10.1136/bmj.322.7285.544.

[6] Khan F, Amatya B. Refugee health and rehabilitation: Challenges and response. J Rehabil Med. 2017;49(5):378-84. Available from: https://doi.org/10.2340/16501977-2223.

[7] Aenishänslin J, Amara A, Magnusson L. Experiences accessing and using rehabilitation services for people with physical disabilities in Sierra Leone. Disabil Rehabil. 2022;44(1):34-43.

[8] Strong J, Varady C, Chahda N, Doocy S, Burnham G. Health status and health needs of older refugees from Syria in Lebanon. Confl Health. 2015;9:12. Available from: https://doi.org/10.1186/s13031-014-0029-y.

[9] Magnusson L, Kebbie I, Jerwanska V. Access to health and rehabilitation services for persons with disabilities in Sierra Leone-Focus group discussions with stakeholders. BMC Health Serv Res. 2022;22(1):1003. Available from: https://doi.org/10.1186/s12913-022-08366-8.

[10] Jerwanska V, Kebbie I, Magnusson L. Coordination of health and rehabilitation services for person with disabilities in Sierra Leone-A stakeholders' perspective. Disabil Rehabil. 2023;45(11):1796-804. Available from: https://doi.org/10.1080/09638288.2022.2074551.

[11] Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. Ann Intern Med. 2018;169(7):467-73. Available from: https://doi.org/10.7326/M18-0850.

[12] Arksey H, O'malley L. Scoping studies: Towards a methodological framework. International Journal of Social Research Methodology. 2005;8(1):19-32. Available from: https://doi.org/10.1080/1364557032000119616.

[13] Reinders NJ, Branco A, Wright K, Fletcher PC, Bryden PJ. Scoping review: Physical activity and social functioning in young people with autism spectrum disorder. Front Psychol. 2019;10:120. Available from: https://doi.org/10.3389/fpsyg.2019.00120.

[14] Higashida M, Soosai J, Robert J. The impact of community-based rehabilitation in a post-conflict environment of Sri Lanka. Disability, CBR & Inclusive Development. 2017;28(1):93-111. Available from: https://doi.org/10.5463/dcid.v28i1.607.

[15] Trani JF, Vasquez-Escallon J, Bakhshi P. The impact of a community based rehabilitation program in Afghanistan: A longitudinal analysis using propensity score matching and difference in difference analysis. Confl Health. 2021;15(1):63. Available from: https://doi.org/10.1186/s13031-021-00397-y.

[16] Barth CA, Wladis A, Blake C, Bhandarkar P, O'sullivan C. Users of rehabilitation services in 14 countries and territories affected by conflict, 1988-2018. Bull World Health Organ. 2020;98(9):599. Available from: https://doi.org/10.2471/BLT.19.249060.

[17] Issa F, Zarka S. Border treatment of both body and soul. Isr Med Assoc J. 2016;18(12):712-13.

[18] Young SS, Lewis DC, Gilbey P, Eisenman A, Schuster R, Seponski DM. Conflict and care: Israeli healthcare providers and Syrian patients and caregivers in Israel. Glob Qual Nurs Res. 2016;3:2333393616666584. Available from: https://doi.org/10.1177/2333393616666584.

[19] Ertl V, Pfeiffer A, Schauer E, Elbert T, Neuner F. Community-implemented trauma therapy for former child soldiers in Northern Uganda: A randomized controlled trial. JAMA. 2011;306(5):503-12. Available from: https://doi.org/10.1001/jama.2011.1060.

[20] Chikovani I, Makhashvili N, Gotsadze G, Patel V, McKee M, Uchaneishvili M, et al. Health service utilization for mental, behavioural and emotional problems among conflict-affected population in Georgia: A cross-sectional study. PloS One. 2015;10(4):e0122673. Available from: https://doi.org/10.1371/journal.pone.0122673.

[21] Knaevelsrud C, Brand J, Lange A, Ruwaard J, Wagner B. Web-based psychotherapy for posttraumatic stress disorder in war-traumatized Arab patients: Randomized controlled trial. J Med Internet Res. 2015;17(3):e3582. Available from: https://doi.org/10.2196/jmir.3582.

[22] Barth CA, Wladis A, Blake C, Bhandarkar P, Perone SA, O'Sullivan C. Retrospective observational study of characteristics of persons with amputations accessing International Committee of the Red Cross (ICRC) rehabilitation centres in five conflict and post-conflict countries. BMJ Open. 2021;11(12):e049533. Available from: https://doi.org/10.1136/bmjopen-2021-049533.
[23] Abou-Abbas L, Sabbagh D, Rossi R, Vijayasingham L, Lteif MR, Rawi H, et al. Challenges in accessing health care services for women and girls with disabilities using a humanitarian physical rehabilitation program in Lebanon: A mixed method study. International Journal for Equity in Health. 2024;23(1):267. Available from: https://doi.org/10.1186/s12939-024-02356-4.
[24] Wang SJ, Bytyçi A, Izeti S, Kallaba M, Rushiti F, Montgomery E, et al. A novel bio-psycho-social approach for rehabilitation of traumatized victims of torture and war in the post-conflict context: A pilot randomized controlled trial in Kosovo. Confl Health. 2016;10:01-07. Available from: https://doi.org/10.1186/s13031-016-0100-y.
[25] Andersen I, Rossi R, KahorhaMukubirho C, Ragazzoni L, Hubloue I. Mental health and psychosocial support during physical rehabilitation in Eastern Democratic Republic of Congo: A retrospective cohort study. Disabil Rehabil. 2023;45(17):2777-86. Available from: https://doi.org/10.1080/09638288.2022.2107093.
[26] Nilsson H, Saboonchi F, Gustavsson C, Malm A, Gottvall M. Trauma-afflicted refugees' experiences of participating in physical activity and exercise treatment: A qualitative study based on focus group discussions. Eur J Psychotraumatol. 2019;10(1):1699327. Available from: https://doi.org/10.1080/20008198.2019.1699327.

PARTICULARS OF CONTRIBUTORS:
1. PhD Research Scholar, Department of Rehabilitation Science, Faculty of Science, Holy Cross College (Autonomous), (Affiliated to Bharathidasan Universitry), Tiruchirappalli, Tamil Nadu, India.
2. Dean, School of Rehabilitation and Behavioral Science, Department of Rehabilitation Science, Faculty of Science, Holy Cross College, (Autonomous), (Affiliated to Bharathidasan University), Tiruchirappalli, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Doly Bokalial,
Department of Rehabilitation Science, Faculty of Science, Holy Cross College (Autonomous), (Affiliated to Bharathidasan University), Tiruchirappalli-620002, Tamil Nadu, India.
E-mail: dolijnv@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: May 18, 2025
- Manual Googling: Aug 02, 2025
- iThenticate Software: Aug 05, 2025 (10%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? NA
- Was informed consent obtained from the subjects involved in the study? NA
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **May 06, 2025**
Date of Peer Review: **May 21, 2025**
Date of Acceptance: **Aug 07, 2025**
Date of Publishing: **Nov 01, 2025**