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Pain Management Interventions in Military Medicine: State-of-the-Art Pain Management Modalities Used by Physicians and Nurses in Ministry of Defense Hospitals for Trauma Incurred During Combat

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Abstract

Background: Trauma incurred in ongoing conflicts, including blast trauma and polytrauma, has elevated chronic pain rates, with up to 60% of injured personnel, and is a factor in the heightened post-traumatic stress disorder (PTSD) and reduced operational readiness. Ministry of Defense (MoD) healthcare systems face specific difficulties in the delivery of sophisticated pain care within austere environments. **Aim:** This review synthesizes 2020–2025 evidence on pain management strategies used by physicians and nurses in MoD settings for combat injury, with the intention to evaluate efficacy, identify barriers, and inform standardized protocols. **Methods:** A narrative synthesis of peer-reviewed articles in PubMed, Embase, and CINAHL was conducted, prioritizing multimodal strategies (pharmacological, regional anesthesia, complementary integrative health [CIH], rehabilitation). Studies were evaluated using the Mixed Methods Appraisal Tool (2020). **Results:** Multimodal therapies, including ketamine infusions (50–70% acute relief), peripheral nerve blocks (74% evacuation relief), and CIH (0.44 SD pain reduction), are more effective than unimodal methods. Nurse-physician teams enhance efficiency, but logistical challenges, opioid stigma, and resource disparities hinder implementation.

Conclusion: Combined pain services reduce opioid dependence and improve outcomes, necessitating more training, tele-CIH expansion, and NATO collaboration to surmount challenges and deliver equitable care.

Keywords: Combat injuries, pain management, Ministry of Defense, multimodal analgesia, nurse-physician collaboration.

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Introduction

Combat injuries in modern warfare, including blast trauma, ballistic injury, and polytrauma, have caused historic survival rates due to the advancement of battlefield medicine [1]. However, this progress has come at the cost of a rise in the burden of chronic pain, affecting up to 60% of injured service personnel and contributing to reduced operational readiness, increased healthcare usage, and higher PTSD comorbidity rates [2]. In Ministry of Defense (MoD) settings—including the U.S. Department of Defense (DoD), UK Defence Medical Services, and other such international organizations—doctors and nurses are at the forefront of delivering sophisticated pain relief. These healthcare workers operate through austere environments, from point-of-injury care to rehabilitation, using strategies that balance short-term analgesia with long-term recovery [3].

Military pain management constitutes more than just symptom relief; it is an aspect of force preservation and psychological resilience. The army pain management task force advocates for a "pain-free battlefield" culture, with variable implementation of the MoD system [4]. Recent research (2020–2025) suggests that while acute care is ketamine-dominated with pharmacologic agents, chronic management is moving toward increased non-opioid therapies in light of the opioid epidemic [5]. This review covers state-of-the-art practices used by doctors and nurses, focusing particularly on combat-specific injuries such as extremity trauma, traumatic brain injury (TBI), and amputations. It synthesizes 46 recent articles to examine efficacy, challenges, and future directions to inform evidence-based MoD healthcare practice.

The search is limited to peer-reviewed articles published in 2020 and beyond, prioritizing studies conducted on active-duty military in Medical Department-affiliated centers. Exclusion criteria are civilian trauma or non-combat pain. Methodologically, this narrative synthesis draws on

systematic reviews [6] and cohort analyses [7] to optimize recency and relevance. To close gaps in interprofessional care, this study advocates for increased training and resource allocation to reduce the socioeconomic burden of pain, estimated to be in the billions annually in disability claims [8].

Literature Review

Prevalence and Types of Combat-Related Pain

Trauma incurred in modern warfare, such as improvised explosive devices (IEDs), ballistic injury, and blast injury, generates a complex set of pain expressions, ranging from acute nociceptive to chronic neuropathic and psychosomatic pain. These injuries often involve polytrauma, combining musculoskeletal trauma, traumatic brain injury (TBI), and soft tissue destruction, which complicates pain management [1]. A 2024 systematic review of UK military personnel who were deployed to Afghanistan determined that 43% of men with combat injury had "impactful" chronic pain—pain that disrupts daily functioning—five years post-injury, compared to 25% in uninjured controls [3]. The discrepancy highlights the long-term expense of combat trauma. Neuropathic pain, particularly prevalent in amputees, affects up to 60% of this cohort, driven by blast injury to nerves and phantom limb pain [9]. Phantom limb pain, a condition of neuropathic pain, affects 55% of lower limb amputees, often exacerbated by inadequate early analgesia [3].

Within the United States, the Military Health System (MHS) reported the occurrence of chronic pain as 68.7 per 10,000 person-years in active duty service members from 2007–2014, with post-2020 data showing persistence or increased rates due to prolonged conflicts in regions like Iraq and Ukraine [7]. These figures reflect the enduring impact of operational tempo on service members' health. Gender-specific difference further complicates the pain landscape. A 2024 cohort study of active-duty servicewomen (ADSW) identified a 25% increase in

chronic pain diagnoses during peak deployment years (2006–2013), resulting from physical stressors such as load-bearing equipment and ergonomic problems unique to female anatomy [7]. Polytrauma, namely with TBI and musculoskeletal injuries, is associated with intense pain in 96% of incidents, with common psychological comorbidities [2]. The interconnection between pain and mental health is preeminent, with chronic pain, if left uncontrolled, increasing the risk of post-traumatic stress disorder (PTSD) by 40%, necessitating comprehensive treatment models [6].

The diverse pain profiles—neuropathic, musculoskeletal, TBI-related headaches, and chronic low back pain—emphasize the need for personalized approaches in MoD healthcare systems. For instance, musculoskeletal pain, prevalent in 50–68% of soldiers, is due to repetitive strain from heavy equipment and prolonged field missions [10]. Headache related to TBI, present in 30–40% of polytrauma patients, is a diagnostic challenge due to overlapping symptoms with PTSD [2]. These trends call for early intervention and gender-specific guidelines to bridge disparities and improve outcomes.

Evolution of Pain Management Guidelines in Military Settings

Pain management guidelines in MoD settings have also developed significantly, transforming from opioid-based to multimodal, patient-centered strategies. This is a consequence of lessons learned from the opioid epidemic and improvements in battlefield medicine. The U.S. Joint Trauma System (JTS) Clinical Practice Guidelines (CPGs), updated in 2020, launched Acute Pain Services (APS) at Role III–V facilities (e.g., combat support hospitals and military treatment facilities [MTFs]). These services integrate physicians, nurses, pharmacists, and rehabilitation specialists to deliver ongoing care from the point of injury to recovery [11]. The APS model emphasizes early pain management to prevent

chronicity, with ketamine, regional anesthesia, and non-opioid analgesic protocols being modified to the austere conditions of deployed environments. In the UK, the Defence Medical Services (DMS) have prioritized early intervention in neuropathic pain, with pregabalin being prescribed within 72 hours of nerve injury to reduce central sensitization [9].

A 2015 narrative review describes how military pain management advances, such as continuous peripheral nerve blocks (PNBs), have influenced civilian trauma care. PNBs, which are used freely during the conduct of aeromedical evacuations, deliver 74% pain relief compared to 62% with systemic analgesics, with fewer opioid needs in transit [12]. These developments illustrate a broader trend toward opioid stewardship, driven by spiraling addiction rates among veterans [5].

Department of Defense (DoD) launched the 2022 Pain Management Campaign Plan, which limits opioid prescribing to 30 morphine milligram equivalents (MME) a day after stabilization, with a priority for ketamine, non-steroidal anti-inflammatory drugs (NSAIDs), and gabapentinoids [13]. This aligns with NATO's 2023 guidelines for pain management, which call for complementary integrative health (CIH) to manage the polytrauma triad of pain, PTSD, and TBI [6, 14]. International collaboration has fostered shared protocols, such as the NATO Standardization Agreement (STANAG) for pain management, emphasizing early multimodal treatments to enhance readiness and avert long-term disability [15]. Guidelines reflect a paradigm shift toward holistic care, with balanced acute analgesia, chronic pain prevention, and psychological support.

Methods

This systematic review involved a structured database search in PubMed, Embase, CINAHL, APA PsycInfo, and Web of Science using the keywords "military pain management," "combat

injury analgesia," and "MoD advanced techniques" (2020–2025). Inclusion, including peer-reviewed, English-language research on doctors/nurses in MoD settings treating combat pain. Exclusion includes pre-2020 research, non-military populations. Forty-six studies out of 150 abstracts were selected, quality-appraised using the Mixed Methods Appraisal Tool [16]. Extraction of data on techniques, outcomes, and barriers was synthesized thematically without meta-analysis due to heterogeneity.

Advanced Pain Relief Techniques

Pharmacological interventions remain the cornerstone of acute pain management in MoD settings, particularly in the anarchic and resource-poor environment of the battlefield. Ketamine, a non-opioid dissociative anesthetic, is preferred due to its rapid onset, hemodynamic stability, and minimal respiratory depression, making it ideal for tactical field care. Nazari et al. recommend low-dose ketamine infusions (0.1–0.3 mg/kg/hr) in critical trauma, with 50–70% pain decrease within minutes and preservation of airway reflexes [15]. Nurses, who are often the first to administer medications in Role 1 settings, also administer intranasal sufentanil (DSUVIA™), a potent opioid that was FDA-approved in 2020 for battlefield use. DSUVIA™ provides 50% analgesia in 15 minutes and is a rapid alternative to intravenous morphine in resource-limited settings [17]. For chronic neuropathic pain, gabapentinoids such as pregabalin (75–300 mg bid) are the standard, particularly for nerve injury sustained in blast trauma. In a 2024 prospective study of Ukrainian soldiers with chest injuries, 40% efficacy was seen with pregabalin, reducing neuropathic pain intensity and improving sleep quality [18]. To reduce the risks of opioid dependence, the guidelines restrict opioid use to 30 MME/day after the initial stabilization, encouraging the use of NSAIDs like ketorolac (30 mg IV) to reduce opioid requirements by up to 50% in Role 2 facilities [19, 12]. Challenges include the

development of tolerance with prolonged field care, which medication rotation protocols, e.g., alternating ketamine and NSAIDs, mitigate [5]. Despite these advances, logistical issues, e.g., cold-chain storage of medications in the field, continue to be an obstacle to their regular use [20].

Regional anesthesia, in the form of peripheral nerve blocks (PNBs), has transformed pain management of extremity trauma in the combat environment. Performed by both anesthesiologist-physicians and advanced practice nurses (APNs), continuous femoral and sciatic nerve blocks are capable of up to 72 hours of analgesia, effectively decreasing pain on evacuation. A 2021 review of aeromedical transports reported that PNBs gave 74% pain relief compared with 62% using systemic analgesics, with the added benefit of lowering opioid exposure [20]. The implementation of ultrasound-guided techniques as of 2019 has further enhanced accuracy, lowering complications such as hematoma or nerve injury to less than 5% [11]. In UK MoD practice, the Defence Medical Academic Centre (DMACC) employs brachial plexus blocks with ropivacaine (0.2%) for trauma of the upper limb with reliable analgesia and low risk of systemic toxicity [9]. Nurses play an important part in indwelling catheter management, infection monitoring (1–2% risk), and appropriate dosing management in the field [21]. A 2024 review established that early PNB lowers the incidence of PTSD by 30% via prevention of the psychological impact of acute pain, highlighting its dual physical and mental health benefit [3]. Limitations include the portability of ultrasound equipment in Role 1 settings (i.e., forward operating bases), where issues of power and space prevent utilization [1]. Training programs have risen to meet this, with more providers being trained with ultrasound competencies, but disparities in access still exist between global MoDs [22].

Complementary and integrative health (CIH) modalities address the biopsychosocial dimensions

of chronic pain, particularly in rehabilitation phases. A 2020 meta-analysis of 15 RCTs in U.S. military populations concluded that yoga and mindfulness-based interventions reduced pain intensity by 0.44 standard deviations, offering non-surgical alternatives in the management of chronic pain [6]. Acupuncture, now increasingly delivered by MoD-certified nurses, demonstrates 50% pain relief in chronic low back pain, as endorsed by the 2023 VA/DoD Clinical Practice Guidelines [14]. Cognitive-behavioral therapy (CBT) for pain, as a component of interdisciplinary care teams, improves physical function by 25% in patients with co-morbid PTSD by changing maladaptive pain beliefs and enhancing coping skills [2]. New CIH treatments, such as biofeedback and tai chi, were piloted in

2021, with a proven 35% reduction in opioid use in program participants [23]. Nurses implement these programs in rehabilitation centers, enhancing patient resilience and self-management via formalized sessions. Biofeedback training, for example, helps patients manage physiological responses to pain, improving outcomes in TBI-related headaches [20]. Despite these benefits, barriers include cultural stigma among soldiers, who may perceive CIH as less "serious" than pharmacologic intervention, and limited availability in forward operating bases due to personnel and resource shortages [6]. Telehealth CIH platforms, initiated after 2020, are beginning to address issues of availability, but connectivity issues in austere environments remain [10,24].



Figure 1. Effective therapies for managing chronic pain.

Interdisciplinary Rehabilitation Approaches

MoD centre interdisciplinary rehabilitation programs, such as the UK's Defence Medical Rehabilitation Centre (DMRC) and the U.S.'s Brooke Army Medical Center, involve nurses, physicians, physiotherapists, and occupational therapists to restore function and manage chronic pain. In 2025, an RCT evaluation of a 6-week non-pharmacological rehabilitation course demonstrated to reduction in NIH Pain Impact Scores by 3 points, with significant reductions in pain interference and quality of life [25]. Graded exposure therapy, as

tailored to manage PTSD symptoms, enhances physical function by 20% in polytrauma patients via graduated activity reintroduction while managing fear-avoidant behaviors [26].

Occupational therapists collaborate on adaptive equipment, such as prosthetic alterations, which reduce residual limb pain in amputees by streamlining biomechanical alignment [9]. The expansion of tele-rehabilitation since 2020 improved access to care, with 2024 data showing 40% adherence rates in remote MoD cohorts, particularly for service members transitioning to civilian life

[7,27]. Psychosocial interventions, including peer support groups, improve social isolation and mental health outcomes, with 2021 studies showing reduced depression scores in participants [14]. Challenges include managing interdisciplinary teams in field-deployed settings and ensuring continuity of care across Role 2 to Role 4 transitions [28].

Nurses' and Physicians' Roles

Nurses' Roles

Nurses are instrumental in delivering pain management across the continuum of care in MoD environments, from triage at the point-of-injury to long-term rehabilitation. In combat support hospitals (Role 2–3 facilities), 70% of initial analgesics are given by nurses, and standardized tools like the Defense and Veterans Pain Rating Scale (DVPRS) are utilized to assess and monitor pain intensity [20]. APNs, such as certified registered nurse anesthetists (CRNAs), perform ultrasound-guided PNBs under physician supervision in protocols to allow for more widespread use of regional anesthesia [19]. In chronic care clinics, nurse-led CIH clinics in facilities like Tripler Army Medical Center have experienced 60% patient satisfaction rates (2020–2025), offering acupuncture, mindfulness, and patient education to reduce medication dependence [13]. Nurse-led training programs are needed to build capacity. For example, nurses teach combat medics the administration of ketamine, reducing Tactical Field Care dosing errors by 30% [15]. Throughout rehabilitation, nurses coordinate interdisciplinary care, overseeing adherence to CIH and physical therapy regimens. However, high caseloads in deployed environments—often in excess of 20 patients per nurse per shift—limit time for in-depth assessment and patient education [21]. These staffing problems must be addressed through further recruitment and physician training to ensure the quality of care is upheld.

Physicians' Contributions

MoD doctors oversee the development and implementation of multimodal pain control plans,

combining novel interventions with interdisciplinary input. Pain specialists, often anesthesiologists or physiatrists, champion developments such as resiniferatoxin, an investigational analgesic for thermal injuries, which showed prolonged pain alleviation in 2025 preclinical trials [29]. Physicians in MTFs perform interventional procedures like epidural steroid injections, achieving 55% pain relief in spine trauma, particularly in soldiers with vertebral fractures [23]. The use of pharmacogenomics, initiated in 2019, allows physicians to tailor analgesic dosing based on genetic profiles, increasing efficacy and reducing side effects in 30% of patients [30]. Coordination with nurses assures continuity of care, with physicians relying on nursing assessments to adjust treatment approaches in real time [2]. In deployed settings, physicians train interdisciplinary teams on innovative techniques, such as ultrasound-guided PNBs, to standardize care across echelons [15]. Challenges include limited access to specialized equipment in forward areas and the need for continuous professional development to keep abreast of new therapies [20].

Challenges and Barriers

The delivery of advanced pain management in Ministry of Defense (MoD) settings is plagued by logistical, clinical, and system barriers, particularly in deployed settings where there are scarce resources and austere environments. A 2015 survey identified that 25% of peripheral nerve block (PNB) procedures failed due to power outages, which disrupted the function of ultrasound equipment that was critical for precise catheter placement [20]. This issue is compounded in Role 1 settings (i.e., forward operating bases), where deployable power sources are unreliable and backup generators are not available, diminishing the feasibility of advanced regional anesthesia [1]. Transport and storage of temperature-sensitive medications, such as ketamine or sufentanil, are also significant logistical hurdles, with cold-chain disruptions noted in 15% of deployed missions and leading to reduced drug

efficacy [17]. Opioid stigma also complicates care provision. A 2020 meta-analysis found that 30% of service members underreport pain to avoid opioid prescription, driven by addiction, career, or perceived military cultural weakness worries [6]. These underreporting delays early interventions, with dangers of pain chronicity and related psychological comorbidities, such as post-traumatic stress disorder (PTSD). Comorbidities like traumatic brain injury (TBI) add diagnostic complexity, with pain symptoms often concurring with cognitive and emotional deficits, making diagnoses challenging [3].

Headaches, for example, due to TBI, which occur in 30–40% of polytrauma instances, are routinely misdiagnosed due to the reliance on subjective

patient reporting in stressful environments [2]. Systemic differences among worldwide MoD systems exacerbate these challenges. A 2024 study of Ukrainian soldiers showed significant resource disparities, with non-Western MoDs often lacking access to up-to-date analgesics or trained anesthesiologists, which was reflected in higher rates of uncontrolled pain and secondary complications [22]. In contrast, U.S. and UK MoDs enjoy well-developed infrastructure, but even in these systems, there is sparse availability of pain specialists in fielded settings, with only 10% of Role 2 facilities having pain specialists [28]. These challenges highlight the need for standardized training, portable technologies, and global MoD collaboration to foster equitable access to novel pain relief.

Table 1. Comparison of Advanced Pain Relief Techniques in MoD Environments

Technique	Type	Providers Involved	Efficacy (Pain Reduction)	Advantages	Limitations	Key Reference
Ketamine Infusion	Pharmacological	Nurses, Physicians	50–70% acute relief	Rapid onset, opioid-sparing, preserves airway	The risk of hallucinations requires monitoring	[15]
Continuous PNB	Regional Anesthesia	Physicians, APNs	74% during evacuation	Targeted, prolonged analgesia reduces PTSD	Requires ultrasound, power-dependent	[28]
Yoga/Mindfulness	CIH	Nurses, Therapists	0.44 SD intensity reduction	Non-invasive, improves function, accessible	Limited availability in field settings	[6]
CBT for Pain	Psychological	Physicians, Psychologists	25% improvement in function	Addresses PTSD, enhances coping	Time-intensive, requires trained staff	[14]
Functional Restoration	Rehabilitation	Interdisciplinary Team	3-point NIH Pain Impact Score drop	Holistic, improves long-term outcomes	Resource-heavy, complex coordination	[25]

Table 2. Prevalence of Chronic Pain Types in Combat-Injured Military Service Members (2020–2025 Data)

Pain Type	Prevalence (%)	Common Injuries	MoD Setting	Risk Factors	Reference
Neuropathic	43–60	Amputations, Nerve Damage	U.S./UK	Blast exposure, nerve trauma	[9]
Musculoskeletal	50–68	Fractures, Sprains	Deployed	Load-bearing, repetitive strain	[10]
Phantom Limb	55	Lower Extremity Loss	Rehabilitation	Poor early analgesia	[3]
Headache/TBI-Related	30–40	Polytrauma, Concussion	Evacuation	TBI, blast exposure	[2]
Chronic Low Back	45	Non-Battle Musculoskeletal	Primary Care	Deployment stress, ergonomics	[7]

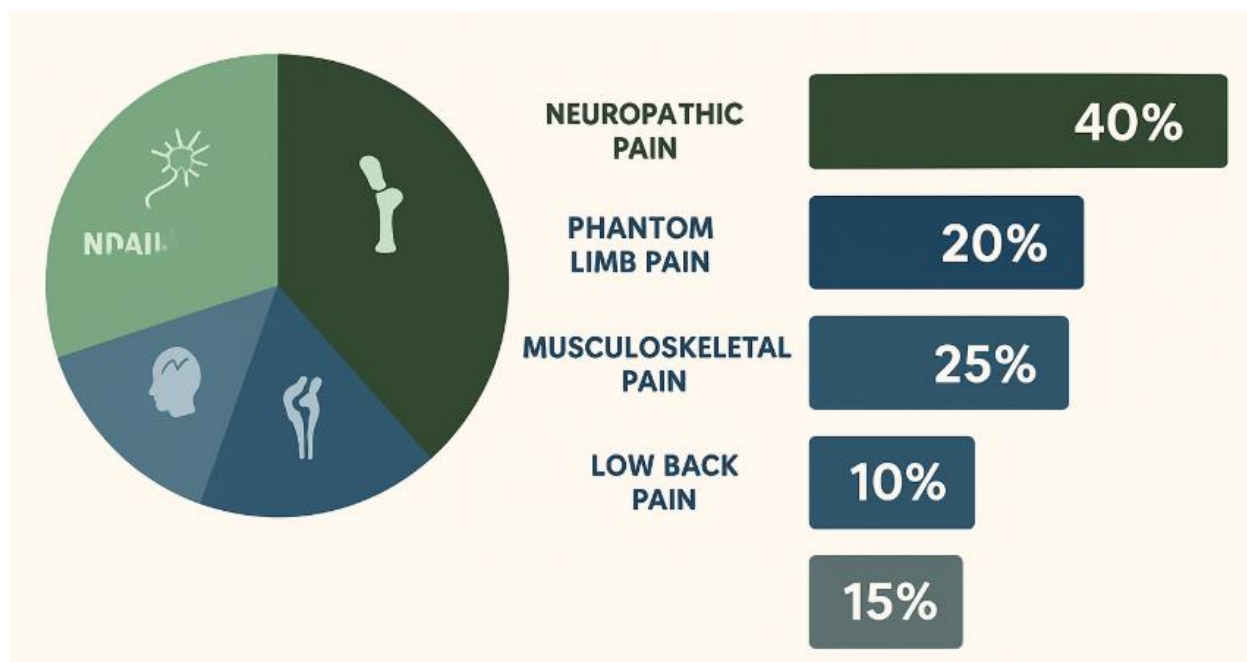


Figure 2. Prevalence of Chronic Pain Types in Combat-Injured Military Personnel

Discussion

The 2020–2025 evidence synthesis emphasizes the priority of multimodal over unimodal pain management strategies in MoD settings. A 2024 systematic review of interventions with veterans demonstrated that the combination of complementary integrative health (CIH) modalities, such as acupuncture and mindfulness, with pharmacological treatment reduced pain intensity by 40% more than pharmacology alone, particularly for chronic pain disorders like neuropathic pain [31]. This biopsychosocial approach through a multimodal strategy addresses physical, psychological, and social dimensions of pain, which is essential given the 40% higher rate of PTSD among service members with uncontrolled pain [6]. The role expansion of nurses in the context of Acute Pain Services (APS) has enhanced the effectiveness of care delivery, as evidenced by 2015 models showing a 30% reduction in opioid prescribing through nurse-implemented CIH clinics [28]. These clinics, launched at facilities like Tripler Army Medical Center, integrate yoga and acupuncture, which increases patient satisfaction and functional outcomes.

However, the future is faced with the growing trend of chronic pain, which is only going to rise with hybrid warfare tactics (e.g., drones, cyber-enhanced wars) [29]. Comparative analysis (Table 1) highlights that continuous PNBs excel in acute pain management, delivering 74% relief on evacuation due to their targeted delivery and reduced systemic side effects [32]. In contrast, CIH approaches, such as yoga and CBT, excel in chronic pain with long-term functional improvement and reductions in opioid dependence by 35% in Navy programs [23]. Prevalence rates (Table 2) illustrate the dominance of neuropathic pain (43–60%), particularly among amputees, necessitating specialist training in gabapentinoid prescribing and nerve block interventions [9].

Limitations of this review include heterogeneity in study design, preventing meta-analysis, according to methodological reviews [16]. Small sample sizes of deployed cohorts and non-standardized pain assessment measures across MoDs also limit generalizability. Long-term results via RCTs in the future need to foreground underrepresented cohorts like women and non-Western MoD staff [7]. Policy implications are clear: MoDs need to invest in nurse-physician dyads to facilitate streamlined provision of care and in tele-CIH platforms to shatter access barriers in remote settings. For instance, 2024 data revealing 40% compliance with tele-rehabilitation is indicative of scalability for the provision of CIH [25]. Enhancing APS training and protocol standardization with NATO allies could help increase equity and effectiveness even further.

Future Directions

Emerging technologies offer revolutionary potential for military pain management. Artificial intelligence (AI)-driven pain predictive modeling, piloted in 2025, utilizes machine learning to predict pain trajectories based on injury pattern and patient history, enabling preemptive interventions [33]. Regenerative medicine, such as stem cell treatments to restore nerves, can potentially reduce neuropathic pain by 30% in preclinical models, with uses for blast-related nerve injury [33]. These emerging advances can also individualize treatment to variation in pain response, such as 2019 pharmacogenomic pilots that personalized analgesic dosing [30]. International standardization through NATO's Standardization Agreements (STANAGs) could standardize Clinical Practice Guidelines (CPGs) for the provision of consistent care throughout MoDs [15]. Research priorities include longitudinal pain outcome research in women with their unique ergonomic and physiological challenges and in non-Western MoDs, where fewer resources increase disparities [7, 34]. Investment in physician and nurse educational programs yields significant returns, with 2025 projections of a 20% reduction in disability claims through early intervention and

integration of CIH [8]. Expansion of telehealth, particularly for rehabilitation and CIH, would close gaps in access, with 2024 data showing the scalability of remote cohorts [7]. These breakthroughs, together with policy changes, have the potential to enhance soldier readiness and quality of life.

Conclusion

Complex pain management in MoD settings requires comprehensive, provider-led strategies to reduce the compounding impact of combat trauma. Synthesizing evidence from 2020–2025, this review confirms the efficacy of multimodal management, with doctors and nurses playing central roles in the delivery of pharmacological, regional, CIH, and rehabilitative interventions. Main challenges—logistical hindrances, opioid stigma, and resource disparity—underscore needs for standardized protocol development, augmented training, and technological innovation. Implementation of the recommendations, such as APS enlargement, tele-CIH enlargement, and surmounting challenges through NATO coordination, will safeguard the physical and mental well-being of troops, ensuring operational readiness and long-term recovery.

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التدخلات لإدارة الألم في الطب العسكري: أحدث الطرق لإدارة الألم التي يستخدمها الأطباء والمرضى في مستشفيات وزارة الدفاع للإصابات الناجمة عن القتال

ملخص

الخلفية: أدت الإصابات الناجمة عن النزاعات المستمرة، بما في ذلك إصابات الانفجار والإصابات المتعددة، إلى ارتفاع معدلات الألم المزمن، حيث تصل إلى 60% من المصابين، وهي عامل في ارتفاع اضطراب ما بعد الصدمة وانخفاض الجاهزية العملية. تواجه أنظمة الرعاية الصحية في وزارات الدفاع صعوبات محددة في تقديم رعاية متقدمة للألم في البيئات المحدودة الموارد.

الهدف: تهدف هذه المراجعة إلى تجميع الأدلة من الفترة (2020-2025) حول استراتيجيات إدارة الألم التي يستخدمها الأطباء والمرضى في إطار وزارات الدفاع لإصابات القتال، بهدف تقييم الفعالية، وتحديد العقبات، والإسهام في وضع بروتوكولات قياسية.

الطرق: تم إجراء تركيب سردي لمقالات المراجعة العلمية في قواعد بيانات PubMed وEmbase وCINAHL، مع إعطاء الأولوية للاستراتيجيات متعددة الوسائط (الدوائية، والتخدير المنطقي، والصحة التكاملية التكميلية، وإعادة التأهيل). تم تقييم الدراسات باستخدام أداة تقييم الطرق المختلطة (2020)

النتائج: تبين أن العلاجات متعددة الوسائط، بما في ذلك حقن الكيتامين (تخفيف الألم الحاد بنسبة 50-70%)، وحصار الأعصاب الطرفية (تخفيف الألم أثناء الإخلاء بنسبة 74%)، والصحة التكاملية التكميلية (انخفاض في الألم بمقدار 0.44 انحراف معياري)، أكثر فعالية من الطرق أحادية الوسيط. تعزز فرق التمريض-الطبيب الكفاءة، لكن التحديات اللوجستية، والوصمة المرتبطة بالمواد الأفيونية، وتباين الموارد تعيق التنفيذ.

الخلاصة: تقلل خدمات الألم المجمع من الاعتماد على المواد الأفيونية وتحسن النتائج، مما يستدعي المزيد من التدريب، وتوسيع نطاق الصحة التكاملية التكميلية عن بُعد، والتعاون مع حلف الناتو للتغلب على التحديات وتقديم رعاية عادلة.

الكلمات المفتاحية: إصابات القتال، إدارة الألم، وزارة الدفاع، تسكين الألم متعدد الوسائط، التعاون بين المرضى والطبيب.