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Dog-Assisted Interventions as a Non-Pharmacological Method of Pain Management in Clinical Settings: A Narrative Review

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Abstract

Introduction and aim: Pain is one of the most common reasons patients seek medical care and the limitations of pharmacological treatment, especially in the context of opioid-related harms, have intensified the search for complementary approaches. Dog-assisted interventions (DAI) involving trained therapy dogs have been investigated in clinical contexts where pain plays a central role. This paper summarises evidence on the analgesic potential of DAI, with attention to postoperative, procedural, chronic, paediatric and oncological/palliative settings.

Material and Methods: A narrative review was conducted. Studies were retrieved from PubMed, Scopus, and Web of Science, combining terms for dog-assisted therapy, animal-assisted intervention, therapy dog and pet therapy with pain-related descriptors. Quantitative and qualitative studies, systematic reviews and meta-analyses were considered. Additional records were identified through citation tracking of relevant reviews and key primary studies.

Results: The evidence is heterogeneous but points in the same direction. Short, structured sessions with a therapy dog can reduce self-reported pain, lower anxiety associated with pain, and improve patient satisfaction without serious adverse events when infection-control rules are observed. Beneficial effects were reported across postoperative, procedural, chronic, paediatric, and oncological or palliative settings, with the strongest signal in paediatric and procedural contexts. Proposed mechanisms include oxytocin release, cortisol reduction, cognitive distraction, autonomic regulation and improved adherence to therapy.

Conclusions: DAI appears to be a safe and well-accepted complementary option for pain management. It should be viewed as an adjunct rather than a replacement for established analgesic strategies and its routine use requires further confirmation through better-designed randomised trials, standardised outcome instruments and clearer reporting standards.

Keywords: *dog-assisted therapy, animal-assisted intervention, pain management, non-pharmacological therapy, therapy dog, clinical settings*

1. Introduction

Pain is a universal clinical problem. It accompanies acute injury, surgical recovery, chronic disease, end-of-life care and many routine procedures. It also contributes to disability, prolonged hospitalisation, and reduced quality of life. Although pharmacological analgesia, especially with opioids and non-steroidal anti-inflammatory drugs, remains the foundation of pain control, drug-based approaches carry well-known risks [1]. Opioids in particular have been linked to dependence, hyperalgesia, respiratory depression and a public health crisis whose scale became fully visible during the last two decades [2]. These concerns have driven a steady interest in non-pharmacological methods that may complement standard care, reducing analgesic consumption while addressing the affective component of pain that medication often leaves untouched.

Among such methods, animal-assisted interventions (AAI), and dog-assisted interventions (DAI) in particular, sit somewhat awkwardly between mainstream and complementary medicine. They are not new in clinical practice, yet the published evidence supporting their effects on pain is fragmented across small studies, divergent terminology and outcomes measured with different scales. Still, the number of investigations evaluating DAI in pain-related contexts has grown noticeably since the late 2000s [3,4,5,6]. Hospitals and rehabilitation centres in Europe, North America, and parts of Asia routinely host therapy dog programmes, and the appeal for clinicians is straightforward: dogs are inexpensive, easy to deploy on a ward and overwhelmingly welcomed by patients.

This review brings together the available evidence concerning the use of DAI as a non-pharmacological method of pain management in clinical settings. It addresses several questions. What is the magnitude and consistency of the analgesic effect attributed to therapy dogs? Which populations benefit most? Which mechanisms have been proposed to explain the effect? And what are the methodological and safety problems that limit current conclusions?

Pain is treated here as a clinical endpoint in its own right rather than as a downstream consequence of anxiety, depression, or distress. The reason is partly pragmatic, since most pain trials report pain as a primary outcome, and partly conceptual: collapsing pain into a wider category of suffering obscures the specific question of whether dogs make people hurt less. That question is not trivial. Effective non-pharmacological options for pain remain rare and ones that patients enjoy enough to engage with voluntarily are rarer still.

2. Background and terminology

Terminology in this field has been a recurring source of confusion. The International Association of Human-Animal Interaction Organizations (IAHAIO) provides the most widely cited classification, last updated in 2018 [7]. Within this framework, animal-assisted intervention (AAI) is the umbrella term covering any goal-oriented and structured intervention that intentionally incorporates animals in health, education, or human services.

AAI in turn includes animal-assisted therapy (AAT), animal-assisted activity (AAA), animal-assisted education (AAE) and the more recently defined animal-assisted coaching. AAT is the most formal of these. It is delivered by a licensed health professional, has measurable goals, is documented in clinical records, and proceeds according to a treatment plan. AAA, in contrast, is informal and may be delivered by trained volunteers, with no specific therapeutic targets beyond comfort and motivation [7]. Both AAA and AAT may use dogs, although dogs dominate the published literature, partly because of their tolerance for clinical environments and partly because their behaviour is easier to predict than that of larger or less domesticated animals.

In this review the term dog-assisted intervention (DAI) is used as a deliberately broad expression covering both AAT and AAA delivered with a dog as the therapy animal. The choice reflects a practical reality. In many published trials the boundary between activity and therapy is blurred or not specified.

Dogs have accompanied medical care for far longer than the modern literature suggests. The first systematic descriptions of therapeutic uses of dogs in mental health practice are usually attributed to Boris Levinson in the early 1960s, but dogs were already present in geriatric homes and psychiatric wards earlier in the twentieth century. The rapid expansion of formal DAI programmes began only in the 1990s, particularly in the United States, and matured with the establishment of professional certification schemes and, more recently, infection-control guidelines for healthcare facilities [8,9].

3. Methods

Articles were identified through searches conducted in PubMed, Scopus, and Web of Science in April 2026. The search combined the terms "dog-assisted therapy", "canine-assisted therapy", "animal-assisted therapy", "animal-assisted intervention", "therapy dog", and "pet therapy" with pain-related descriptors including "pain", "analgesia", "postoperative", "procedural", "chronic pain", and "palliative". Additional records were retrieved through citation tracking of relevant reviews and key primary studies.

Inclusion was restricted to publications in English, peer-reviewed, that reported on dogs as the primary therapy species and included a pain-related outcome (self-reported pain, behavioural pain score, analgesic consumption, or pain-induced sleep disturbance). Both quantitative and qualitative studies were considered, as were systematic reviews and meta-analyses. Because this is a narrative review, no formal risk-of-bias assessment was conducted and no quantitative synthesis was performed. Studies using horses, dolphins, or other species exclusively were not included.

4. Proposed mechanisms of analgesic effect

The way in which contact with a dog might reduce pain remains incompletely understood and the explanations offered in the literature operate at several levels. Some appeal to neuroendocrine pathways, others to attention and cognition and others still to the broader social context of the clinical encounter.

The most frequently cited neuroendocrine candidate is oxytocin. Beetz et al. [10] reviewed evidence from 69 original studies on human-animal interaction and concluded that the oxytocin system is plausibly involved in many of the reported psychophysiological effects, including stress reduction, blood-pressure lowering, and improved mood. Stroking a familiar dog has been associated with elevations in salivary or plasma oxytocin in both species, alongside reductions in cortisol. Oxytocin itself has documented anti-nociceptive properties, mediated at least in part through descending modulation in the periaqueductal grey and through interactions with endogenous opioids. The mechanism is therefore not purely psychological.

Cortisol provides a complementary marker. Although results are mixed and some pediatric studies, notably Calcaterra et al. [11], did not find significant cortisol differences between DAI and control groups, several investigations report cortisol declines after dog interaction [12,13,14]. Because sustained elevation of cortisol is associated with hyperalgesia and lowered pain thresholds, any sustained reduction in physiological stress would be expected to influence pain perception [15].

Beyond these endocrine pathways, cognitive distraction probably accounts for a large share of the effect, especially in acute and procedural contexts. Sobo et al. [6] emphasised this point in their qualitative analysis of canine visitation therapy after paediatric surgery. The children consistently described attention shifting away from pain and toward the dog. Marcus [16] reached a similar interpretation in her review of the science behind animal-assisted therapy, suggesting that distraction, social engagement, and tactile stimulation may converge on the same descending modulatory systems that classical mind-body interventions exploit.

There is also one more clinically meaningful effect: dogs improve adherence and motivation. Patients are more willing to attend a difficult physiotherapy session, complete a chemotherapy infusion or remain calm during a magnetic resonance imaging examination when a friendly dog is present [17]. The improvement in tolerance is itself an analgesic factor, because anxiety amplifies pain perception.

A further consideration concerns autonomic regulation. Several investigations have documented changes in heart rate and blood pressure during contact with a therapy dog [11, 18]. Cole et al. [18], in their study of hospitalised patients with advanced heart failure, observed lower haemodynamic measures and reduced epinephrine and norepinephrine concentrations after a 12-minute visit by a volunteer with a dog. These shifts are not, in themselves, analgesic, but the autonomic state of a patient and the perception of pain are tightly coupled. A more parasympathetic profile correlates with lower reported pain intensity and improved tolerance of nociceptive stimuli [19].

5. Postoperative and surgical pain in adults

One of the most widely cited trials in this area is Harper et al.'s randomised study of therapy dog visits after total hip or knee replacement. [4]. Seventy-two patients recovering from hip or knee replacement at a major orthopaedic centre were randomised to a 15-minute visitation with a therapy dog before physical therapy or standard postoperative physical therapy regimens. Patients in the dog group reported significantly lower visual analogue scale (VAS) pain scores after each session, and their satisfaction with the hospital stay was higher. The effect size was clinically meaningful, with mean VAS reductions exceeding what would typically be expected from a brief intervention.

More recent work has extended this signal to general rehabilitation populations. Mittly et al. [20] conducted a randomised controlled trial in a Budapest rehabilitation centre with 116 patients recovering from a mix of neurological, rheumatological, and orthopaedic conditions. The intervention group received the same physical therapy as controls, plus regular dog therapy sessions. Both groups showed significant reductions in VAS pain scores, with no clear additional analgesic effect attributable to the dog component itself. The larger between-group differences were on quality of life and anxiety, where dog therapy produced a substantial effect over rehabilitation alone. Patients in the experimental group were also reported as more engaged and more willing to attend sessions, which echoes earlier observations on motivation.

One feature deserves attention. The orthopaedic and rehabilitation evidence is dominated by older adult patients, in whom psychological distress, fear of falling, and reduced engagement with rehabilitation can compound objectively measured pain. The dog seems to act partly on this composite outcome, which complicates the interpretation of any single endpoint.

6. Procedural and acute pain

Procedural pain occupies a different niche. It is brief, generally predictable and often associated with strong anticipatory anxiety, making it a natural target for distraction-based interventions.

Marcus and colleagues conducted two of the most cited studies in this area. The first, in 2012, examined the effect of brief therapy dog visits in the waiting area of an outpatient tertiary pain clinic [5]. Patients who chose to spend their waiting time with a certified therapy dog reported significant reductions in pain, fatigue, and emotional distress on 11-point numeric rating scales, compared with patients in the conventional waiting room. In 2013 the same group replicated the design in patients specifically diagnosed with fibromyalgia [21] and reported analogous improvements.

Perez et al. [17] examined an unusual but increasingly common context: preparation of paediatric patients for magnetic resonance imaging. The MRI scanner is loud, claustrophobic, and frightening to many children, often requiring sedation. In their pilot trial, a brief animal-assisted therapy session reduced pre-examination anxiety enough to suggest that DAI might reduce the need for sedation in selected children. Although pain was not the primary endpoint, the broader question, what therapy dogs do to the affective tone of a procedure, is directly relevant to pain management.

Animal-assisted activities have also been studied in adult intensive care, where pain is intertwined with delirium, immobilisation, and post-intensive-care syndrome. Scoping reviews of this niche report consistent feasibility but limited evidence on hard pain outcomes.

Acute care wards outside the ICU have produced their own pragmatic evidence. Coakley and colleagues [22] reported on patient experiences during DAI sessions in an acute care setting and found that the most consistently mentioned benefits were calmness, distraction from discomfort and a felt sense of normality in the hospital environment. Such qualitative work matters because numerical pain reductions tell only part of the story. A patient who waited for a procedure with a dog beside them, even if their numeric pain score did not change by much, may remember the hospital encounter quite differently from one who waited alone. That memory shapes future care-seeking behaviour and adherence to follow-up appointments, both of which influence longer-term pain trajectories.

7. Chronic pain and primary care

Chronic pain probably represents the area where DAI has the most potential and the least convincing evidence.

The clearest signal comes from Rodrigo-Claverol et al. [23], whose randomised clinical trial enrolled 52 polymedicated geriatric patients suffering from chronic joint pain in a Spanish primary care centre. The intervention group received twelve weekly sessions of kinesitherapy supplemented by the presence of a therapy dog, while controls underwent identical exercises without the dog. Patients in the DAI group reported significantly lower pain and lower pain-induced insomnia after the intervention. The presence of the dog also improved adherence to the programme, which in this population, where polypharmacy and frailty often limit engagement with structured exercise, is itself a clinically important finding.

Fibromyalgia represents another classical chronic-pain syndrome where DAI has been studied. Marcus et al. [21] showed reduced pain and improved emotional distress after brief therapy dog visits, although the open-label design and convenience sampling restrict generalisation. Patients themselves frequently rate dog interactions as among the most pleasant and least demanding complementary therapies they have tried, which matters in a condition characterised by treatment fatigue.

A practical observation runs through these studies. The presence of a dog seems to lower the perceived cost of engaging with care. In primary care or chronic pain clinics, where motivation flags and follow-up attendance drops, this matters more than it would in an acute surgical setting.

A meta-analysis of paediatric studies by Zhang et al. [24] is worth mentioning here even though the population is younger, because it captured the same paradox visible in adult chronic pain: significant pain reduction across multiple small trials, but heterogeneity in outcome measurement and design that prevents firm conclusions about the size of the effect.

Neurological conditions provide an instructive overlap with the chronic pain category. Rodriguez-Martinez et al. [25] reviewed seventeen clinical trials of DAI in adults with neurological diseases, including Alzheimer’s disease, multiple sclerosis, and stroke. The reviewers found benefits across motor, physical, and behavioural domains, but pain itself was rarely a primary outcome. The omission is regrettable, because chronic pain is highly prevalent in all three populations and contributes substantially to disability. Boldig and Butala [26] reached a similar conclusion in their narrative review of pet therapy for neurological disorders, noting that dog ownership and dog-assisted therapy appear to influence motor, language, social, and emotional outcomes, while leaving pain trajectories largely unexplored. The pattern, where pain is measured only as a secondary or tertiary endpoint, recurs throughout the DAI literature and probably leads to a systematic underestimation of the analgesic signal.

8. Paediatric pain

Children represent the most extensively studied population in DAI research on pain. The reasons are pragmatic. Hospitalised children show strong, visible reactions to therapy dogs, behavioural pain scales are well validated in this age group, and the ethical case for non-pharmacological alternatives in young patients is particularly compelling [27].

The earliest evidence often cited is Sobo et al.'s 2006 pilot study of canine visitation therapy after surgery [6]. Twenty-five English-speaking children aged 5 to 18 underwent a single, standardised canine visitation session in the postoperative period. Quantitative pre-post measurements showed a significant decrease in perceived pain, and qualitative interviews suggested that the mechanism was largely cognitive, with children describing the dog as something to focus on instead of the pain.

Braun et al. [3] later expanded the picture in a quasi-experimental design comparing 18 children who received DAI during acute hospitalisation with 39 who did not. The intervention group showed significantly lower pain scores after the session. Interestingly, blood pressure and pulse did not differ, while respiratory rate was slightly higher in the DAI group, which the authors interpreted as a sign of arousal and engagement rather than distress. Tsai and colleagues [28] reported related findings on stress responses in hospitalised children, where the presence of a therapy dog modified behavioural indices of distress in ways consistent with reduced sympathetic activation.

The most comprehensive paediatric postoperative study is the randomised trial by Calcaterra et al. [11], which enrolled 40 children aged 3 to 17 in the immediate postoperative period. Children randomised to a 20-minute session with a therapy dog showed lower pain perception on the faces pain scale, faster recovery of vigilance and activity after anaesthesia, and changes in heart rate, oxygen saturation, and prefrontal cerebral oxygenation that the authors interpreted as adaptive cardiovascular responses. Salivary cortisol did not differ between groups, a finding that has been replicated in some but not all paediatric work.

Two meta-analyses pull this material together. Charry-Sánchez et al. [29] reviewed 26 controlled studies of DAI in children and reported a small visible effect that did not, however, reach statistical significance on pain across the three studies that addressed it directly. Zhang and colleagues [24] examined pain specifically, and their meta-analysis suggested a clinically relevant reduction. Both reviews concluded that DAI can be useful as a complementary intervention but that the quality of evidence remains limited by small samples and methodological variability.

9. Cancer and palliative care

Cancer settings combine multiple sources of distress: pain, fear, fatigue, anticipatory nausea, and the existential weight of the diagnosis. They are also the contexts in which patients spend long, repetitive hours in waiting rooms, infusion suites, or radiotherapy bunkers, which makes them well suited to DAI.

Orlandi et al. [30] conducted one of the early controlled studies in an Italian oncology day hospital. Patients receiving chemotherapy with versus without animal-assisted activity were compared on standardised symptom questionnaires and vital signs. The DAI group showed an unexpected improvement in arterial oxygen saturation as well as reductions in depressive symptoms. Pain was not the primary outcome but distress, which mediates pain perception, was lower in the intervention group. Marcus et al. [31] reported a brief but illustrative cohort study at a North American cancer infusion centre, where patients spontaneously offered animal-assisted activity rated the experience as positive and reported symptomatic improvement across pain, mood, and well-being domains.

Paediatric oncology has received specific attention. Silva and Osório [32] evaluated an DAI programme involving three 30-minute sessions in children with leukaemia and solid tumours. The intervention significantly reduced pain, irritation, and stress, although changes in mood, anxiety, depression, quality of life, heart rate, and blood pressure did not reach statistical significance. McCullough et al. [33] subsequently conducted a multisite randomised controlled trial of an animal-assisted intervention in paediatric oncology, examining effects on children and parents alike. Their results were nuanced rather than uniformly positive, with measurable but modest effects on emotional outcomes and limited evidence of direct analgesic benefit, which usefully tempered the earlier enthusiasm generated by smaller studies.

Palliative care has a smaller but instructive evidence base. Engelman's paper [34] is not a controlled trial. It is an anecdotal observational study of 19 palliative care patients seen by a single psychologist–therapy dog team with outcomes captured through patient self-reports, staff observations and chart notes rather than standardised measures. All 19 patients reported positive experiences and none reported worsening of pain. In at least five cases the dog's movement toward and then away from the site of somatic pain was followed by patient-reported analgesia, a pattern Engelman tentatively likens to a "hypnoanalgesia" effect. The paper also notes an unanticipated reduction in staff stress. The illustrative description of a 51-year-old patient whose social withdrawal had been resistant to standard interventions and who reengaged after a single DAI session, exemplifies rather than constitutes the study. Subsequent reviews continue to describe the evidence in palliative care as weak but consistent in the direction of effect and clinicians often emphasise that pain in this setting is inseparable from the patient's wider emotional and existential experience, which makes a purely pharmacological framework inadequate.

10. Methodological limitations and safety considerations

Three methodological issues recur throughout the DAI literature, and any honest reading of the field has to confront them.

First, sample sizes are small. Most original studies enroll fewer than 80 participants, often fewer than 40, and statistical power for detecting modest pain reductions is consequently limited. Kamioka et al. [35], in their systematic review of randomised trials of animal-assisted therapy, identified only 11 RCTs across all clinical indications, and considered the quality of the included studies as relatively low. The situation has improved since 2014 but not as fast as enthusiasm for AAI programmes.

Second, blinding is essentially impossible. Patients clearly know whether or not a dog is present, and the placebo or expectancy component of any DAI study is therefore substantial. Some authors have tried to control for this with active comparators, such as puzzles, music, or human visitors, but no consensus has emerged about what an appropriate control intervention should look like.

Third, outcome measurement is heterogeneous. Studies have used the VAS, numerical rating scales, the Wong-Baker faces pain scale, the FLACC scale, salivary cortisol, blood pressure, satisfaction questionnaires, and ad hoc instruments, often within the same trial. Meta-analyses and systematic reviews have repeatedly highlighted this as the main barrier to pooled estimates [24, 29, 35, 36, 37, 38]. Pain-induced insomnia, analgesic consumption and time-to-mobilisation are clinically relevant outcomes that remain underreported. Hu and colleagues [37], in their meta-analysis of DAI for individuals with cognitive impairment, encountered similar problems and could pool only a small subset of available trials, illustrating that the issue is not specific to pain research but pervades the wider DAI literature.

Safety concerns are real but generally manageable. The principal risks are zoonotic infection, allergic reactions, animal-related injury (most often a minor scratch) and adverse events to the dog itself. Lefebvre et al. [8] published the first comprehensive infection-control guideline for DAI in healthcare facilities and subsequent revisions have refined screening, hygiene, and patient-selection criteria. Patients with severe immunosuppression, open wounds, or known dog allergies are typically excluded. Reports of pathogen transmission through therapy dogs are surprisingly few, though the literature on this question is itself limited.

Animal welfare deserves more attention than it usually receives in clinical publications. Glenk's reviews [39, 40] of therapy dog welfare during DAI concluded that, on the available evidence, participation in standard sessions does not appear to cause acute distress in well-screened dogs, but that handler skill, session duration and the right of the animal to disengage are important factors. The ethical case for routine welfare monitoring is straightforward, and ought to be reflected in trial protocols.

11. Discussion

What can be said with confidence after this overview is more limited than the enthusiasm of many DAI programmes might suggest. The evidence consistently points in one direction: short, structured visits by a trained therapy dog produce small to moderate reductions in self-reported pain across diverse clinical populations. The effect is most reliably seen on the affective component of pain, on procedural distress, and on patient satisfaction. It is less clear, and probably smaller, on objective physiological markers and on analgesic consumption.

Pain has a sensory dimension that is relatively impervious to short, pleasant interventions, and an affective and cognitive dimension that is highly responsive to attention, social context, and stress regulation. DAI seems to act mostly on the affective and cognitive side of pain rather than the sensory one, through a combination of cognitive distraction, oxytocin and other neuroendocrine pathways, and improved engagement with the broader treatment plan.

This positions DAI clearly as an adjunctive therapy. It is not a replacement for analgesics, regional anaesthesia, or appropriate procedural sedation. It can, however, reduce the affective burden that often dominates the patient's experience and, in selected populations, reduce demand for additional pharmacological treatment. Adjunct status is sometimes presented as a limitation, but in the contemporary context of opioid reduction strategies it is precisely the role for which non-pharmacological interventions are most needed.

Several practical implications follow. Implementation is straightforward in postoperative wards, paediatric units, infusion centres, and rehabilitation departments, provided that infection-control and welfare protocols are in place. Sessions can be short, often 10 to 20 minutes, and do not require expensive equipment. The main costs are in handler training, animal screening, and protocol development. The cost-effectiveness analyses available are preliminary, but the low marginal cost of each session, combined with measurable improvements in patient satisfaction, suggests that DAI compares favourably with many other complementary interventions in healthcare.

There are populations and contexts in which caution is warranted. Severely immunocompromised patients, those with documented dog allergies, and patients with a history of trauma involving dogs should be excluded or referred to alternative interventions. The cultural background of the patient matters as well, since attitudes toward dogs vary substantially between populations, and assuming uniform acceptance is naive. Patient choice should remain central.

Future research priorities are not difficult to identify. Larger randomised trials with active control conditions, standardised outcomes including analgesic consumption and pain-related sleep, and consistent reporting of dose, session duration, and handler qualifications would all advance the field substantially. Routine animal-welfare monitoring should be a standard component of trial design rather than an afterthought.

One question that the literature has yet to address satisfactorily is whether the analgesic effect of DAI is dose-dependent in any meaningful sense. Most studies use a single session, lasting anywhere between five and forty minutes, and report immediate post-session effects. Whether repeated, longer sessions produce larger reductions in pain, or whether the effect plateaus quickly, remains unknown. The few studies that have followed patients over a longer course of DAI suggest that benefits do not diminish with repetition, but the absence of dose-response data is a serious gap for any intervention aspiring to clinical recommendation.

12. Conclusions

Dog-assisted interventions have accumulated a body of evidence suggesting that they reduce self-reported pain, lower procedural anxiety, and improve satisfaction across a range of clinical settings, including postoperative care, chronic pain clinics, paediatric units, and oncology. The magnitude of the effect is generally small to moderate and appears to be mediated largely by attentional, neuroendocrine, and motivational pathways rather than by direct nociceptive modulation.

The evidence base remains methodologically uneven. Small samples, heterogeneous outcomes, and limited blinding restrict the certainty of current conclusions, and several recent reviews have called for better-designed trials. Despite these limitations, DAI can be reasonably recommended as a complementary, low-cost, low-risk component of pain management, provided that infection control, animal welfare, and patient consent are properly addressed.

The most useful future studies will probably not be those that try to prove a large analgesic effect from a single dog visit. They will be the ones that integrate DAI into existing care pathways, measure outcomes that clinicians and patients actually value, and report enough procedural detail for the results to be reproducible across institutions.

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