

Factors influencing nurses' use of maggot debridement therapy

ABSTRACT

Management of hard-to-heal wounds remains a significant challenge for healthcare systems, with substantial economic burdens. Maggot debridement therapy, using sterile larvae of *Lucilia sericata*, effectively debrides necrotic tissue and promotes healing, yet its use is limited. This narrative review examines the influences on the use of this form of debridement by registered nurses, focusing on knowledge and attitudes, treatment-related pain, and practical issues. Findings indicate that wound specialist nurses are more knowledgeable and supportive of maggot debridement therapy compared with non-wound specialists, underscoring the need for targeted educational interventions. Pain management is critical, with mixed reports on pain levels, highlighting the necessity for tailored pain-relief strategies. Practical challenges include procurement difficulties and cost, suggesting a need for streamlined processes and clear clinical guidelines. Addressing these barriers through education, research, and improved logistics could enhance the acceptance and use of maggot debridement therapy, improving patient outcomes in wound management.

Key words: Maggot debridement therapy ■ Hard-to-heal wounds ■ Wound management ■ Nurse attitudes ■ Pain management

The current cost of wound care to the NHS is substantial and has been rising significantly over the past decade. Recent studies estimate that the annual cost of wound management in the NHS is around £8.3 billion. This figure includes £5.6 billion associated with managing unhealed wounds and £2.7 billion for healed wounds. A large proportion of these costs, about 81%, is incurred in community settings due to the high frequency of visits by district and community nurses, healthcare assistants, and practice nurses (Guest et al, 2020; Bumford, 2022; Legs Matter, 2023). Furthermore, the burden of wound care is expected to reach £10 billion annually, making it one of the highest expenditures for the NHS, following cancer and diabetes. This rise underscores the need for a more evidence-based and integrated approach to wound care to improve efficiency and patient outcomes (Public Policy Projects, 2023).

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Hard-to-heal wounds, such as lower limb ulcers, pressure ulcers, and diabetic foot ulcers, often remain unhealed after 3 months of conventional treatment, leading to increased infection risk and patient discomfort (Atkin et al, 2020; Parizad et al, 2022). Maggot debridement therapy, using sterile larvae of the green bottle fly (*Lucilia sericata*), has been shown to be an effective treatment for these wounds by debriding necrotic tissue and promoting healing (Shamloul and Khachemoune, 2023). However, use of the therapy remains limited. This narrative review critically examines the factors influencing the use of maggot debridement therapy by registered nurses, including knowledge and attitudes, treatment-related pain, and practical issues.

Knowledge and attitudes

The success of maggot debridement therapy is heavily influenced by the knowledge and attitudes of nurses. Studies indicate that wound specialist nurses are more knowledgeable and positively inclined towards maggot debridement therapy compared with non-wound specialists (Hopkins et al, 2022). In a survey of 165 nurses, wound specialist nurses demonstrated higher confidence and willingness to use maggot debridement therapy, whereas non-wound specialist nurses expressed significant reservations, often describing maggots as 'disgusting' and 'unclean' (Hopkins et al, 2022). This discrepancy underscores the critical role of education in shaping attitudes towards this form of therapy.

Nigam et al (2022) found a positive correlation between knowledge scores and the likelihood of using maggot debridement therapy as a first-line treatment, suggesting that educational interventions could mitigate negative perceptions and barriers. However, these findings were derived from the general public, raising questions about their applicability to nursing professionals. Bazaliński et al (2023) supported this by showing that nurses with more professional experience and knowledge were more willing to use maggot debridement therapy, although this study was conducted in Poland, which may limit its generalisability to the UK context.

Despite the evidence supporting maggot debridement therapy, misconceptions and negative associations with maggots persist. Pajarillo et al (2021) highlighted that nurses with experience in maggot debridement therapy generally viewed it positively but acknowledged the challenges of overcoming deep-seated fears and misconceptions among colleagues. This suggests that improving knowledge through targeted education could enhance acceptance and uptake of maggot debridement therapy among nursing staff. Continuous professional development (CPD) programmes focusing on

maggot debridement therapy can bridge knowledge gaps and reduce the stigma associated with the therapy. Educational interventions should be designed to address specific misconceptions and provide hands-on experience, to build confidence among nurses.

It has also been suggested that cultural factors and societal norms can significantly impact attitudes towards maggot debridement therapy (Bazaliński et al, 2023). In some cultures, the use of maggots is more readily accepted due to a historical precedent for using natural remedies. Conversely, in other cultures, the association with decay and uncleanness can be more pronounced, leading to resistance against this form of treatment. Understanding these cultural nuances is crucial for developing effective educational strategies to promote the acceptance and use of maggot debridement therapy (Mohd Zubir et al, 2020; Yusuf et al, 2022).

Moreover, leadership in healthcare settings plays a pivotal role in shaping attitudes towards innovative treatments such as maggot debridement therapy. Nurse leaders and senior staff who advocate for the therapy and integrate it into standard practice can influence more junior nurses to adopt a positive view towards it. The presence of role models who endorse maggot debridement therapy can help in normalising its use and overcoming initial resistance.

Interdisciplinary collaboration is another factor that can enhance the uptake of maggot debridement therapy. When nurses work closely with dermatologists, surgeons, and other health professionals who support the use of maggot debridement therapy, they are more likely to appreciate its benefits and feel more confident in recommending it to patients. Thus, fostering a collaborative environment can be instrumental in overcoming barriers related to knowledge and attitudes (Shamloul and Khachemoune, 2023).

Overall, the literature highlights that improving knowledge and attitudes towards maggot debridement therapy among nurses requires a multifaceted approach involving education, leadership, and interdisciplinary collaboration. By addressing these areas, the healthcare system can better harness the potential of maggot debridement therapy to improve patient outcomes in management of hard-to-heal wounds.

Treatment-related pain

Pain management is a crucial consideration in wound care, and maggot debridement therapy has been associated with treatment-related pain due to the proteolytic enzymes released by maggots, which can stimulate nerve endings and promote nerve regeneration (Lipiński et al, 2020). Studies have reported mixed outcomes regarding pain levels in patients undergoing maggot debridement therapy. For instance, Dumville et al (2009) found that patients reported higher pain scores compared with those treated with hydrogel dressings. This increase in pain was more pronounced in the group treated with free-range maggots compared with those treated with bagged maggots, suggesting that the method of application significantly affects patient comfort.

Gunasegaran et al (2022) also reported that patients treated with free-range maggots experienced more pain and required additional anaesthesia compared with those treated with bagged maggots. The small sample size and lack of control

group in these studies limit the ability to generalise the findings. Nonetheless, the evidence indicates that although maggot debridement therapy can be effective, managing associated pain is crucial for patient acceptance and adherence to treatment.

Moreover, the subjective nature of pain and pre-existing conditions such as neuropathy complicate the assessment and management of pain in maggot debridement therapy (Jordan et al, 2018). Ensuring adequate pain management protocols and educating patients about potential discomfort can help mitigate these barriers. Providing comprehensive pre-treatment information and support could enhance patient willingness to undergo this form of therapy, despite the associated pain.

The development of pain management strategies tailored to maggot debridement therapy is essential. This could include pre-emptive analgesia, the use of less painful application methods such as bagged maggots, and close monitoring of patient pain levels. Further research into the mechanisms of maggot debridement therapy-related pain and effective management strategies could improve patient outcomes and increase the acceptability of this therapy.

Patient education plays a vital role in pain management during maggot debridement therapy. Anxiety can exacerbate pain. Educating patients about what to expect during treatment, including potential pain and discomfort, can prepare them mentally and reduce their anxiety – and the pain they experience. Clear communication about pain management options and reassurance that pain can be controlled effectively are essential components of patient education (Ogrin and Elder, 2022).

Innovative approaches to pain management during maggot debridement therapy are also being explored. For instance, combining the therapy with pain-relieving modalities such as topical anaesthetics or advanced wound dressings that provide a cushioning effect can be beneficial. Integrating these approaches into standard maggot debridement therapy protocols could enhance patient comfort and treatment adherence (Pajarillo et al, 2021).

Furthermore, personalised pain management plans that consider the patient's pain threshold, previous experiences with wound care, and psychological factors can lead to better pain control and overall satisfaction with maggot debridement therapy. Tailoring pain management to individual needs ensures that patients receive the most appropriate and effective care (Phang et al, 2021).

Overall, addressing pain management is multifaceted, requiring a combination of education, tailored pain relief strategies, and continuous monitoring. By improving pain management protocols, nurses can enhance the patient experience and outcomes associated with maggot debridement therapy, making this valuable therapy more accessible and acceptable.

Practical issues

Practical challenges, including procurement, cost, and logistical issues, significantly impact the use of maggot debridement therapy. Hopkins et al (2022) identified procurement difficulties and the need for separate budgets as major barriers to the use of maggot debridement therapy. The study

highlighted that both wound specialist and non-wound specialist nurses cited cost and the complexities of ordering and dispensing maggots as significant hurdles.

Economic evaluations of maggot debridement therapy have yielded conflicting results. Soares et al (2009) reported that maggot debridement therapy was more expensive than hydrogel dressings but resulted in faster healing times and improved health-related quality of life. In contrast, Wayman et al (2000) found maggot debridement therapy to be more cost-effective, with fewer dressing changes and shorter overall treatment times compared with hydrogel dressings. These discrepancies highlight the need for contemporary, large-scale economic evaluations to provide clearer guidance on the cost-effectiveness of maggot debridement therapy.

The lack of national clinical guidelines on maggot debridement therapy and its omission from many nursing curricula contribute to its underuse (Wilson et al, 2019). Integrating maggot debridement therapy into nursing education and establishing clear protocols for its use could address these practical barriers. Raising awareness and providing training on the therapy could enhance its acceptance and uptake, ultimately improving patient outcomes.

Logistical challenges such as the timely availability of maggots and the coordination required for their use need to be addressed. Developing streamlined processes for ordering and dispensing maggots, possibly through centralised procurement systems, could alleviate these issues. Ensuring that maggots are readily available when needed is critical for the practical implementation of maggot debridement therapy.

Furthermore, the environmental conditions required to store and transport maggots can add another layer of complexity. Maggots need to be kept at specific temperatures to remain viable for debridement, which can complicate logistics, particularly in settings without appropriate storage facilities. Addressing these storage and transportation needs through dedicated facilities and training for staff on proper handling procedures can mitigate these barriers (Nigam et al, 2022).

Another practical issue is the resistance from nurses due to unfamiliarity and lack of confidence in using maggot debridement therapy. Providing hands-on training sessions and workshops can help build the necessary skills and confidence, facilitating smoother implementation of maggot debridement therapy in clinical practice (Hopkins et al, 2022).

In addition, the reimbursement policies for maggot debridement therapy can vary significantly, which has an impact on its use. Clearer reimbursement guidelines and policies that recognise the cost benefits of faster healing and reduced complications could incentivise the use of maggot debridement therapy. Policymakers should consider the long-term cost savings and patient benefits when evaluating reimbursement frameworks for the therapy (Soares et al, 2009).

Finally, patient acceptance and preference can also pose practical challenges. Although many patients may be open to trying new therapies, the idea of using live maggots can be distressing for some. Ensuring that patients receive thorough education about the benefits and process of maggot debridement therapy, as well as addressing any concerns or fears they may have, is essential for its successful implementation (Ogrin and Elder, 2022).

Addressing the practical challenges associated with maggot debridement therapy requires a multi-faceted approach involving improvements in procurement processes, education and training for nurses, and clear guidelines and policies to support its use. By overcoming these barriers, maggot debridement therapy can be more widely accepted and used, leading to better patient outcomes in the management of hard-to-heal wounds.

Applications for research and practice

The reviewed literature suggests several areas for future research and practical applications to promote the use of maggot debridement therapy. First, there is a need for large-scale, randomised controlled trials to evaluate the efficacy and cost-effectiveness of maggot debridement therapy compared with other debridement methods. Such studies could provide robust evidence to support the integration of maggot debridement therapy into clinical practice guidelines. Research should consider diverse patient populations and settings to enhance the generalisability of findings and address any contextual factors that may influence outcomes.

Second, educational interventions targeting both wound specialist and non-wound specialist nurses could address knowledge gaps and misconceptions, fostering more positive attitudes towards maggot debridement therapy. Implementing training programmes and incorporating maggot debridement therapy into nursing curricula could enhance nurses' confidence and willingness to use this therapy. These interventions should include hands-on training, case studies, and exposure to successful maggot debridement therapy applications to reduce stigma and build practical skills.

Addressing practical issues related to the procurement and cost of this therapy is also essential. Developing streamlined processes for ordering and dispensing maggots and securing funding for the therapy could alleviate some of the logistical barriers. Policymakers and healthcare organisations should consider these factors to facilitate the broader adoption of maggot debridement therapy. Centralised procurement systems and dedicated budgets can ensure that maggots are readily available and reduce the financial burden on individual departments.

Further research should also explore patient perspectives on maggot debridement therapy, including their experiences and perceptions of pain and discomfort. Understanding patient experiences can inform strategies to improve patient education and support, thereby enhancing the overall acceptability of this therapy. Studies should investigate how to effectively communicate the benefits and manage the expectations of patients undergoing maggot debridement therapy, ensuring they are well-informed and comfortable with the process.

Moreover, interdisciplinary collaboration is crucial for the successful implementation of maggot debridement therapy. Encouraging collaboration between nurses, dermatologists, surgeons, and other health professionals can foster a supportive environment. Joint training sessions and interdisciplinary team meetings can help integrate maggot debridement therapy into routine practice and improve patient outcomes.

Innovative approaches to pain management during maggot debridement therapy should also be explored. Combining

this form of therapy with pain-relieving modalities, such as topical anaesthetics or advanced wound dressings, can improve patient comfort. Personalised pain management plans that consider the patient's pain threshold, previous experiences, and psychological factors can lead to better pain control and overall satisfaction with maggot debridement therapy.

Addressing the barriers to maggot debridement therapy through targeted research, education, streamlined procurement processes, patient support, and interdisciplinary collaboration can enhance the acceptance and use of the therapy in clinical practice. These efforts can ultimately lead to improved patient outcomes.

Conclusion

Maggot debridement therapy offers a promising option for the management of hard-to-heal wounds, yet its uptake and use remains limited by various factors, including knowledge and attitudes of nurses, treatment-related pain, and practical challenges. Addressing these barriers through targeted education, robust clinical guidelines, and streamlined procurement processes could enhance its acceptance and use in clinical practice. Further research is needed to provide definitive evidence on the efficacy and cost-effectiveness of maggot debridement therapy, which could support its broader implementation and ultimately improve patient outcomes. **BJN**

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KEY POINTS

- Maggot debridement therapy is an effective treatment for hard-to-heal wounds but is underused due to limited knowledge and negative attitudes among nurses
- Education and targeted interventions can significantly improve nurses' willingness to use and confidence in maggot debridement therapy
- Effective pain management strategies are crucial for patient acceptance of and adherence to maggot debridement therapy
- Practical challenges such as procurement difficulties and logistical issues need to be addressed to facilitate the wider use of this treatment
- Interdisciplinary collaboration and strong leadership are essential to integrate maggot debridement therapy into standard wound care practice and improve patient outcomes

CPD reflective questions

- Reflecting on your current knowledge and attitude towards maggot debridement therapy, where would you say it currently sits? What steps could you take to improve your own understanding and acceptance of this treatment?
- Consider ways in which the practical challenges of using maggot debridement therapy, such as procurement and pain management, could be addressed within your clinical setting to enhance patient outcomes
- How can you contribute to fostering a positive attitude and greater acceptance of maggot debridement therapy among colleagues and patients, considering cultural and societal influences?

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