

# The Real Value of Mechanical Debridement in Complex Wounds – an Economic Evaluation

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## Introduction:

Non-healing, complex or stalled wounds fail to heal in the expected time required for tissue repair, in spite of their optimal wound management.<sup>1,2</sup> Wound management requires addressing the etiologic causes and underlying disorders such as venous hypertension.<sup>2</sup> A multidisciplinary approach to wound management including the whole chain of care is recommended. A project was developed in the Azienda USL, south east Toscana, Italy, a region of about 300 x 150 km, to improve quality of care for patients with wounds (Fig 1). The region has 8 hospitals and 13 nursing homes for a population of 850.000. Daily, on average 1200 community patients receive wound management. The project aimed to improve knowledge and skills when delivering wound treatment in the community. The current study compared clinical efficacy and cost of autolytic, enzymatic and mechanical debridement using a monofilament pad and a pad with a handle.

## Methods:

Currently in the community enzymatic and autolytic debridement is used for patients with wounds that contain sloughy tissue. To address the need for mechanical debridement a monofilament debrider\* was proposed for its added value in terms of efficacy, safety, tolerability, results and ease of use.<sup>3-6</sup> Eighty community patients with complex wounds of various etiologies containing sloughy tissue were included in the study and followed up for 15 days (Fig 2). Patients gave informed consent. Patients were allocated to the different treatment groups at random. At baseline patient's medical history, wound characteristics and previous treatment was recorded. During follow up visits a questionnaire was completed scoring wound condition, patient reported comfort/pain during debridement, time required for the procedure and product handling, using a 5-point Likert scale. Costs were calculated taking into account clinical efficacy, time to debridement, number of home visits, nursing costs, costs per product used.

## Results:

Debridement was effective (Fig 3) and comfortable (Fig 4) using all evaluated methods (on a 5-point Likert scale, the 2 types of monofilament products scored a mean of 4,9 and 4,8, enzymatic debridement scored a mean of 4,6 and autolytic debridement a mean of 3,6). The number of debridement procedures needed was significantly lower for the monofilament debrider group (Fig 5). The total costs for debridement using the monofilament pad and product with handle was Euro 58,67 and Euro 72,47 respectively. For enzymatic debridement the total costs were Euro 213,35 and for autolytic debridement total costs were Euro 98,67 (Fig 6). Total wound care cost was significantly ( $p < 0,001$ ) lower in the monofilament group due to a reduction in debridement time, number of visits and nursing time (Fig 7). Based on these results the monofilament product is proposed to be added to the list of products available for wound debridement in the community.



Fig 1: Azienda USL, South East Toscana, Italy



\*Debrisoft, Lohmann & Rauscher GmbH & Co KG  
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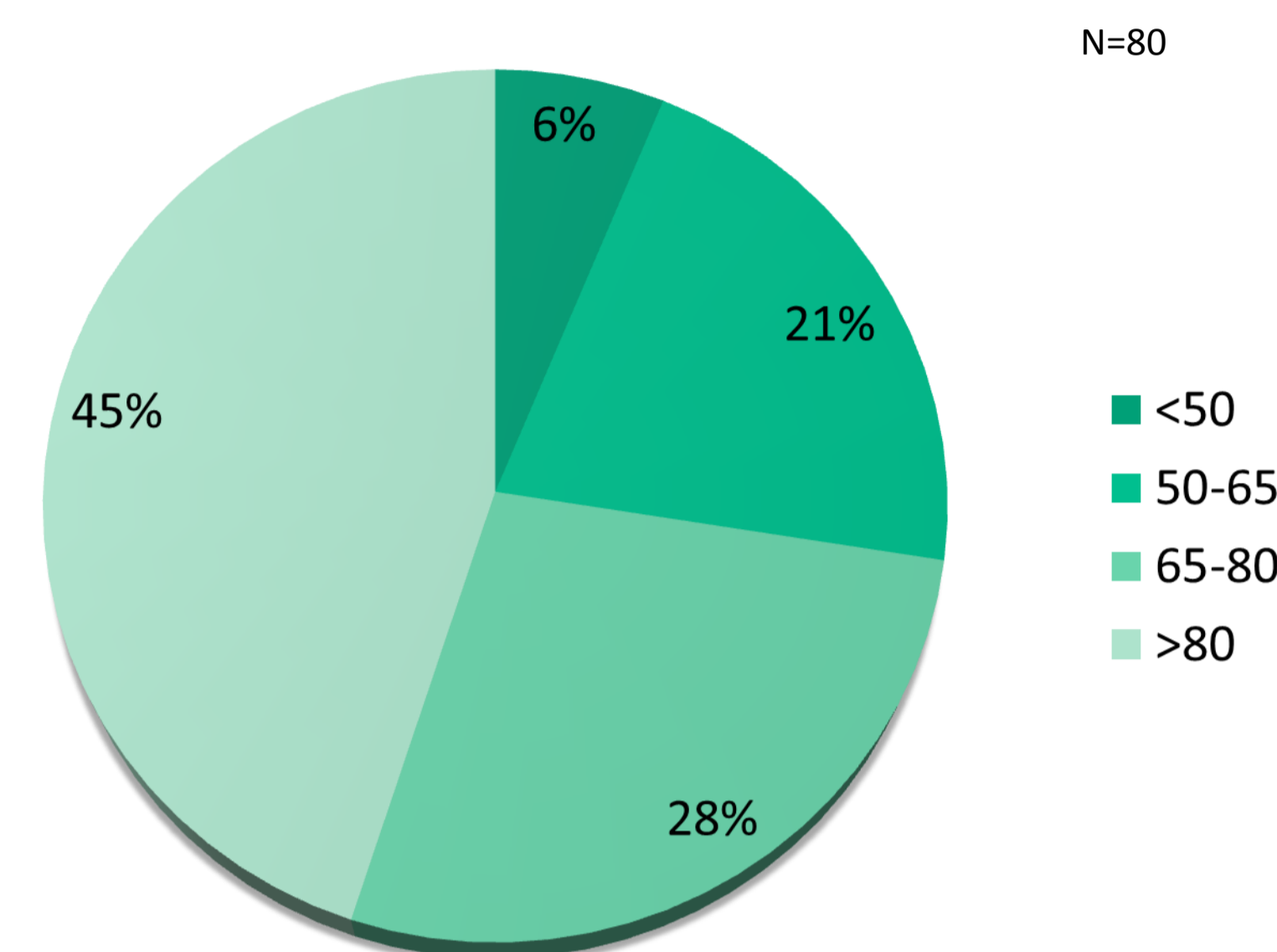


Fig 2: Percentage of patients belonging to the different age groups

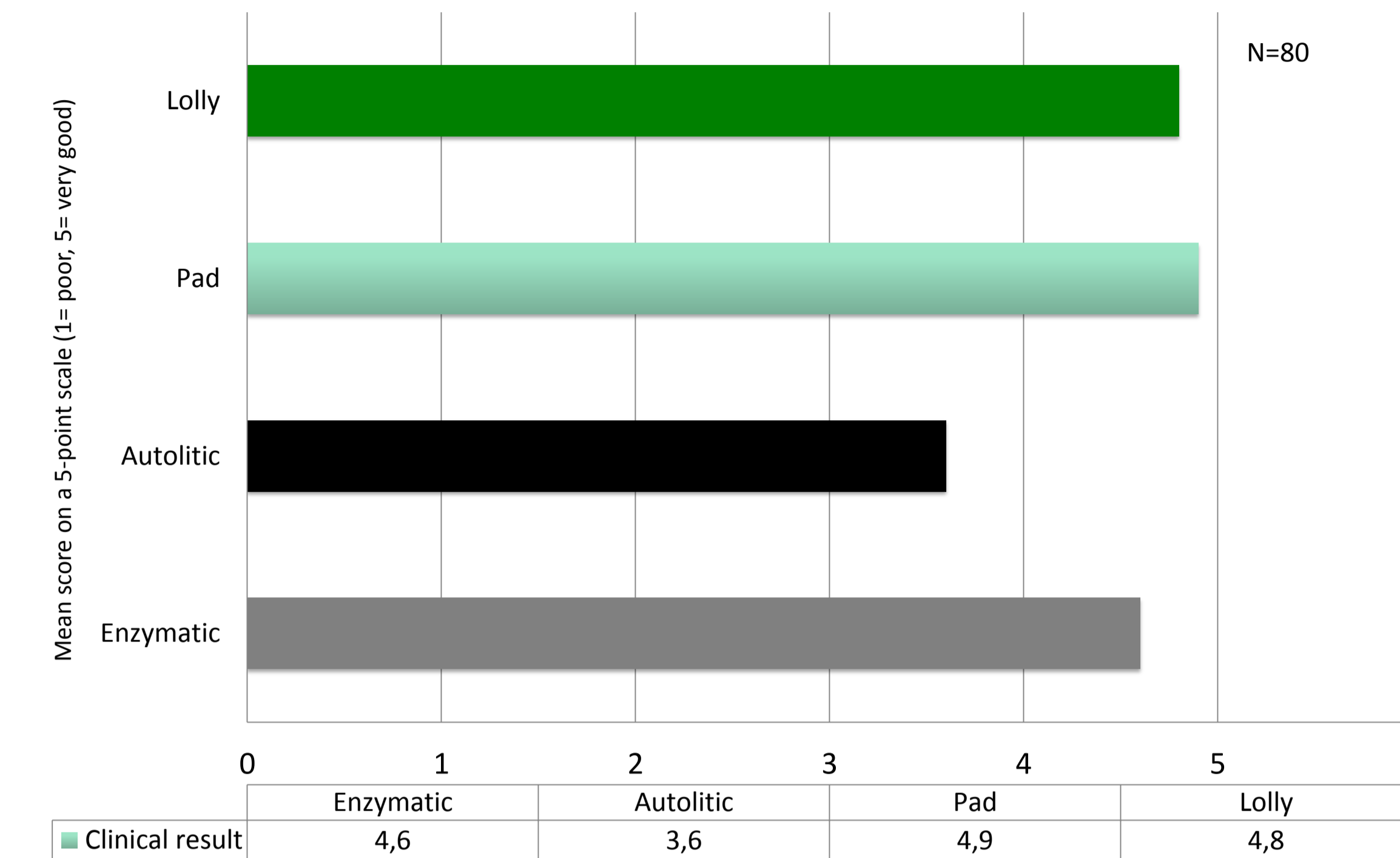


Fig 3: Efficacy of debridement using various methods

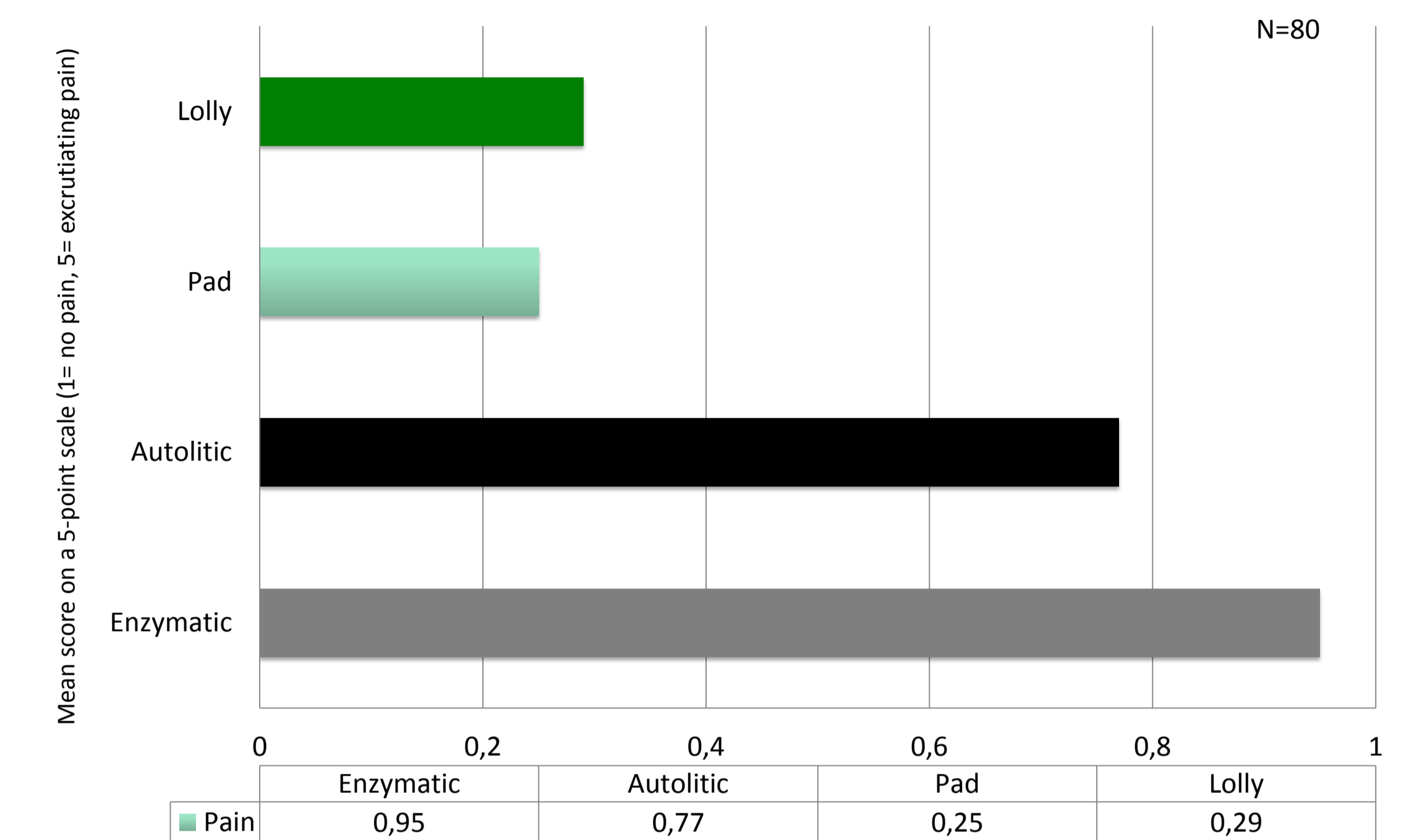


Fig 4: Patient-reported pain during debridement using various methods

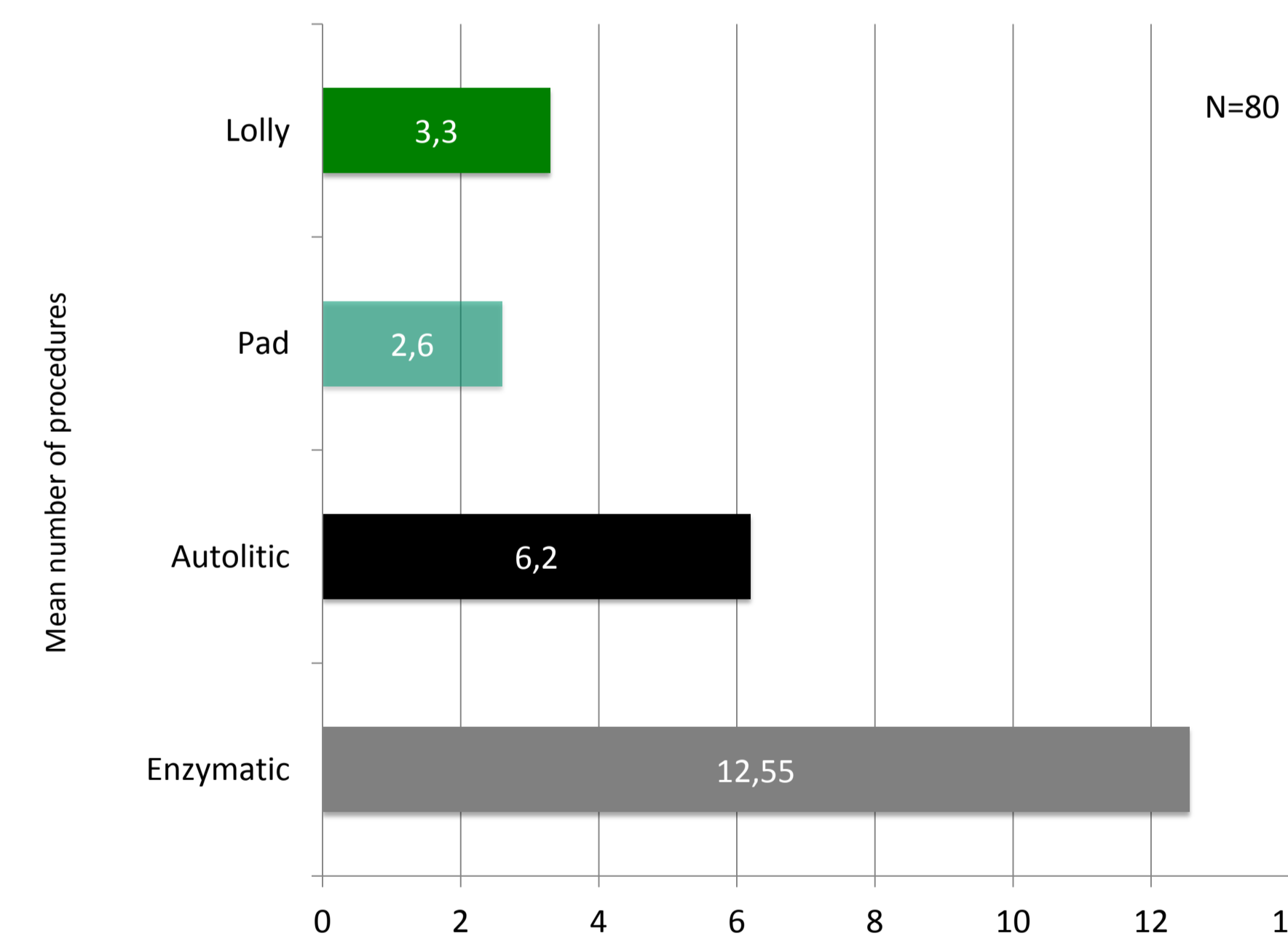


Fig 5: Number of debridement procedures needed to obtain effective debridement

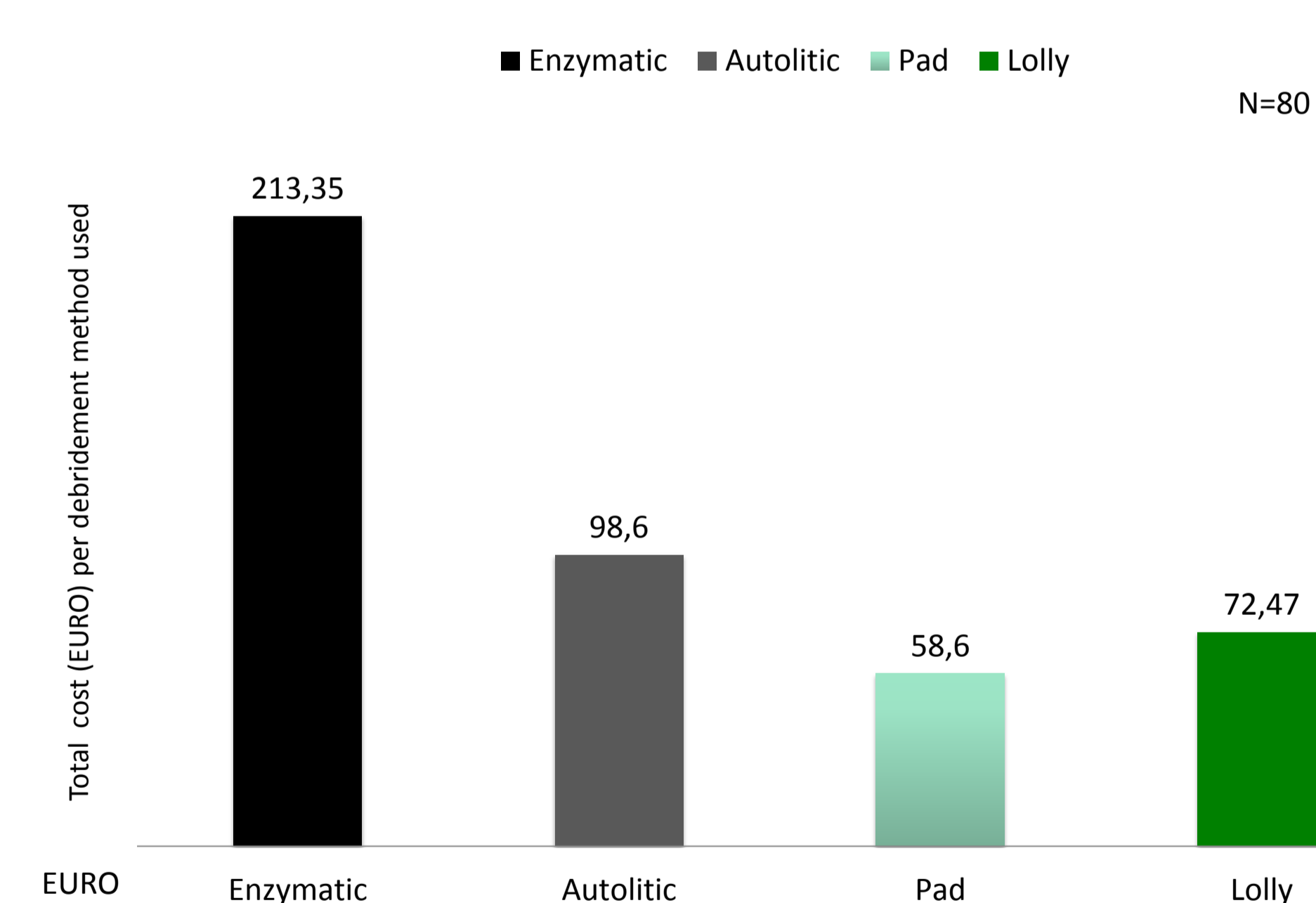


Fig 6: Total debridement costs (EURO) comparing various debridement methods

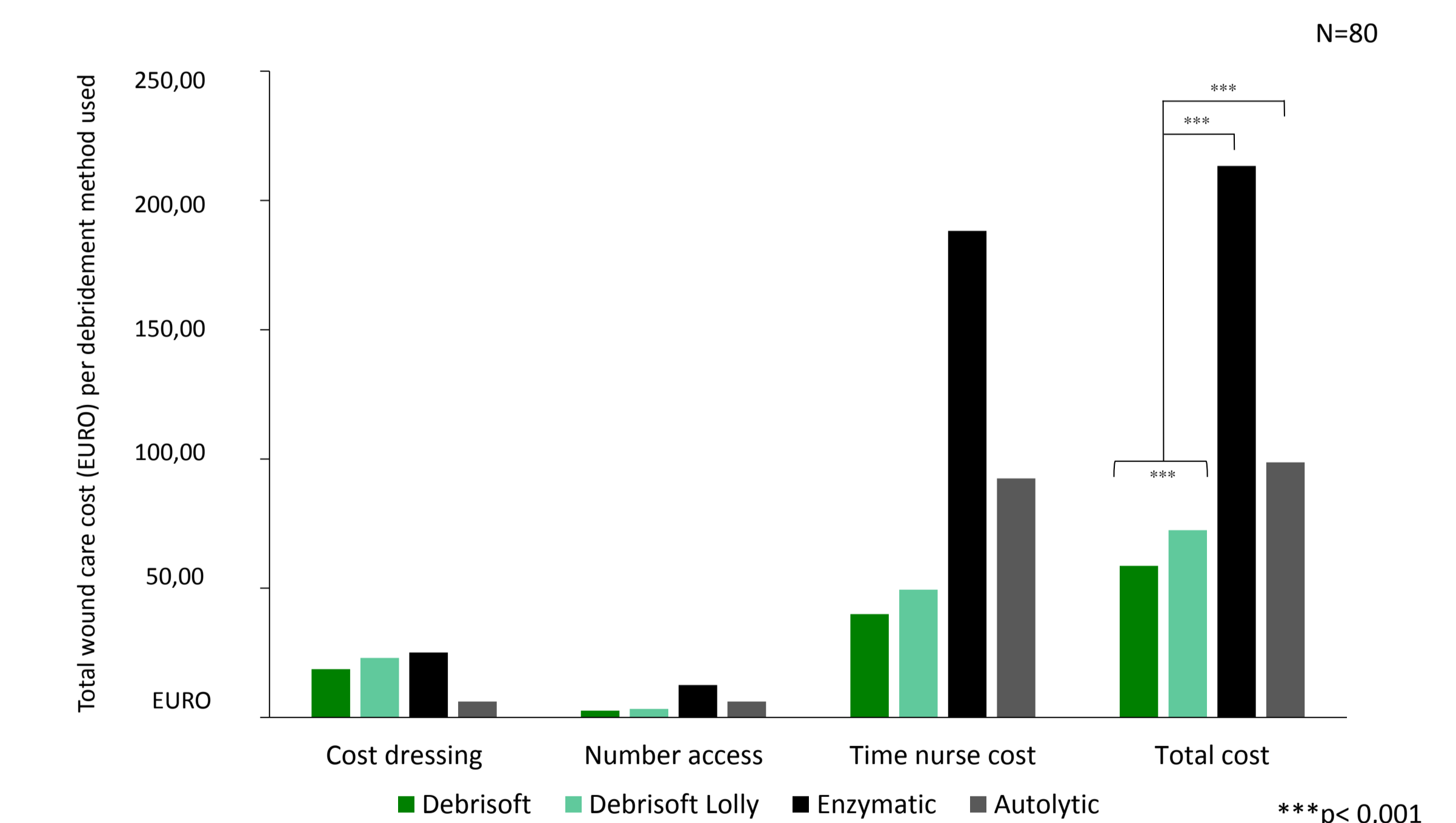


Fig 7: Total costs (EURO) of wound treatment comparing various debridement methods

## Discussion:

Mechanical debridement is historically associated with the use of wet-to-dry gauze, which non-discriminatorily removes devitalized tissue, resulting in significant pain and damage to healthy tissue.<sup>1,2</sup> Enzymatic and autolytic debridement may be slow and not suitable for wounds such as diabetic foot ulcers. In clinical studies mechanical wound cleansing and debridement using a monofilament polyester fiber product was effective, pain and trauma free.<sup>3-6</sup> Our study showed the monofilament products to deliver better and faster debridement and a good patient tolerance. Both the number of visits and nursing time was reduced leading to a significant reduction in total cost of debridement.

## Conclusion:

The addition of the monofilament products to our debridement portfolio use for wound management in the community represents an essential added value in the range of dressings available for patients with complex wounds with appropriate use of tight resources.

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