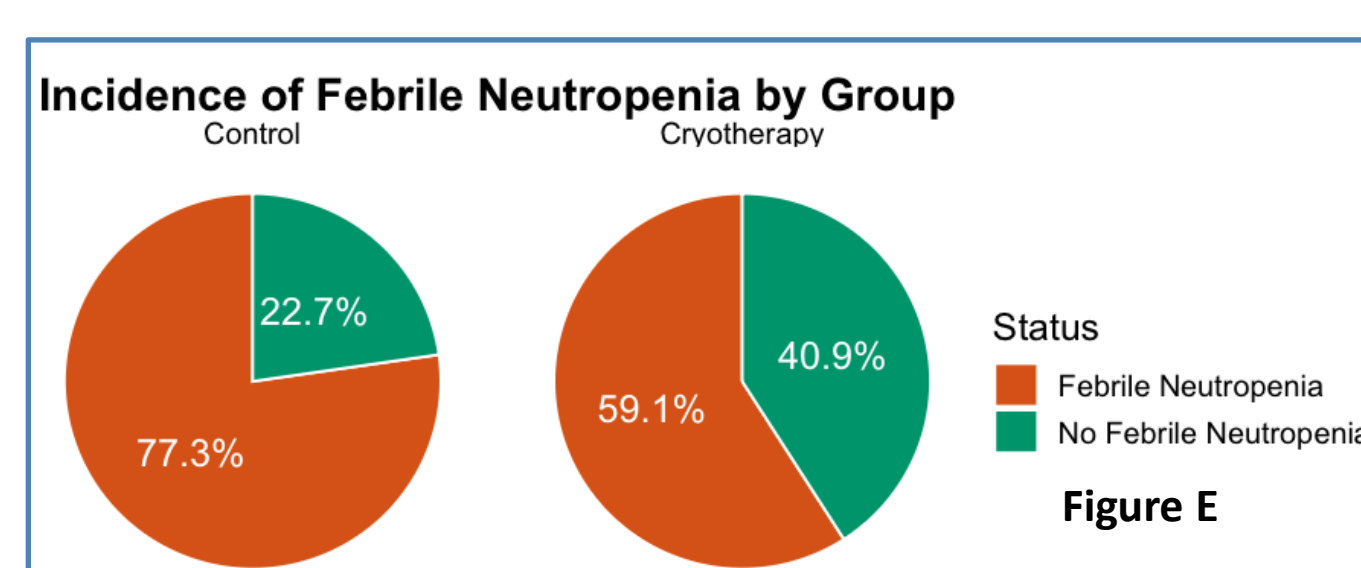
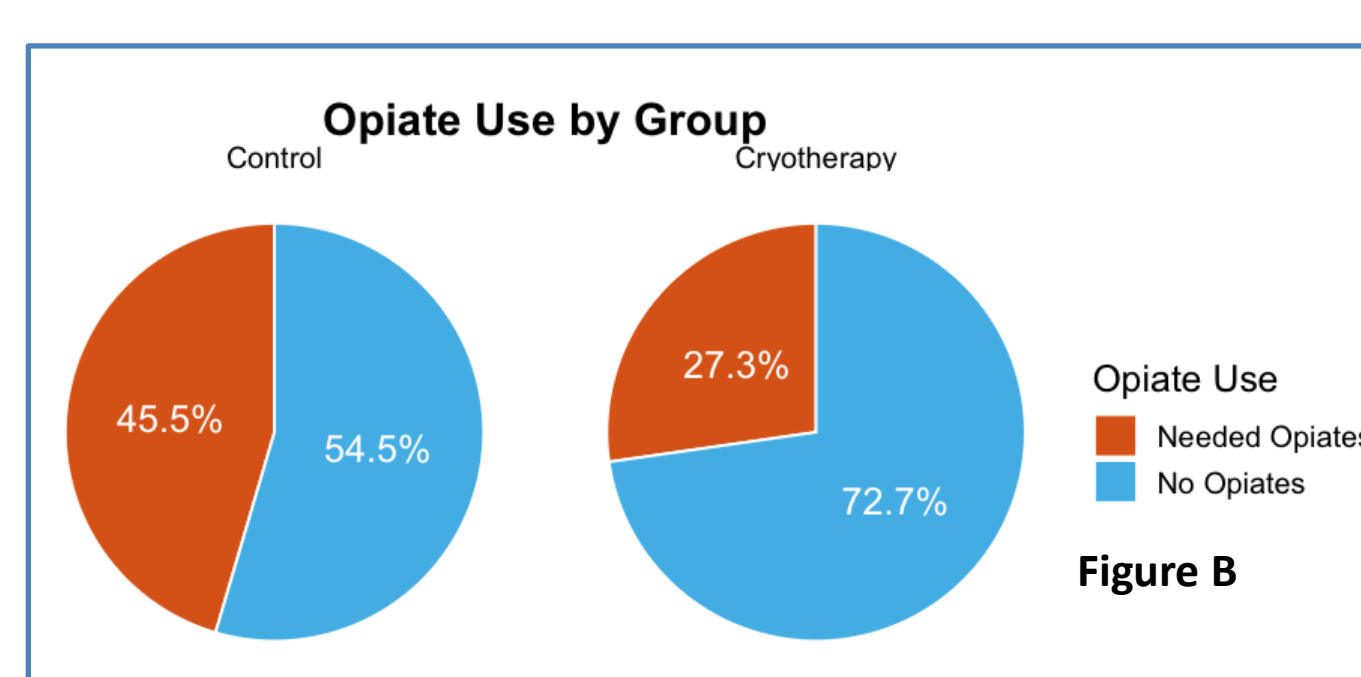
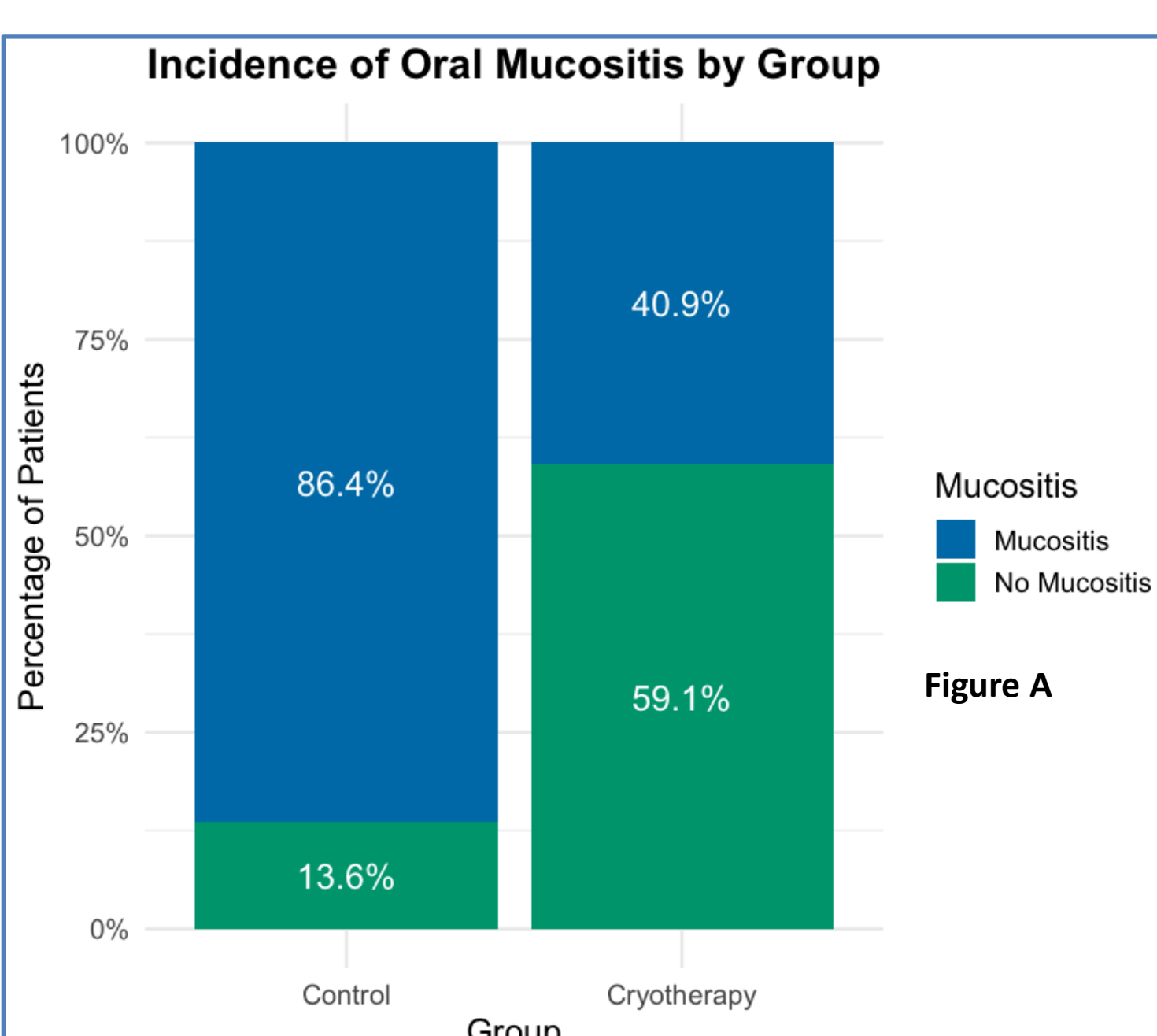


## Introduction

- Oral mucositis (OM) is a common and debilitating complication of haematopoietic stem cell transplantation, particularly following conditioning with alkylating agents such as melphalan
- Ulcerative mucositis causes severe pain, limits oral intake, and often requires strong analgesia, hospital admission, and nasogastric or intravenous nutritional support (Riley et al., 2015).
- These complications can delay or interrupt cancer treatment, potentially affecting overall survival.
- In immunocompromised patients, mucosal ulceration increases sepsis risk due to microbial translocation (Jensen et al., 2014).
- OM-related hospitalisation costs over £56,000 per patient (Elting & Chang., 2019), highlighting the need for preventive strategies.
- Oral cryotherapy (cooling the mouth with iced lollies before, during, and after chemotherapy) is a simple, low-cost method showing promise in reducing OM incidence and severity in melphalan-based conditioning.

## Methods

- Since October 2024, oral cryotherapy has been implemented at Sheffield Teaching Hospitals Haematology Department, UK.
- Patients receive an iced lolly 30 minutes before, during, and 30 minutes after melphalan infusion.
- By March 2025, 22 patients received the intervention. Outcomes were compared with 22 historical control patients who did not receive cryotherapy.
- OM severity was assessed using the WHO Oral Toxicity Scale. Statistical analysis was performed using R software, with Chi-square tests applied to compare categorical variables between groups.

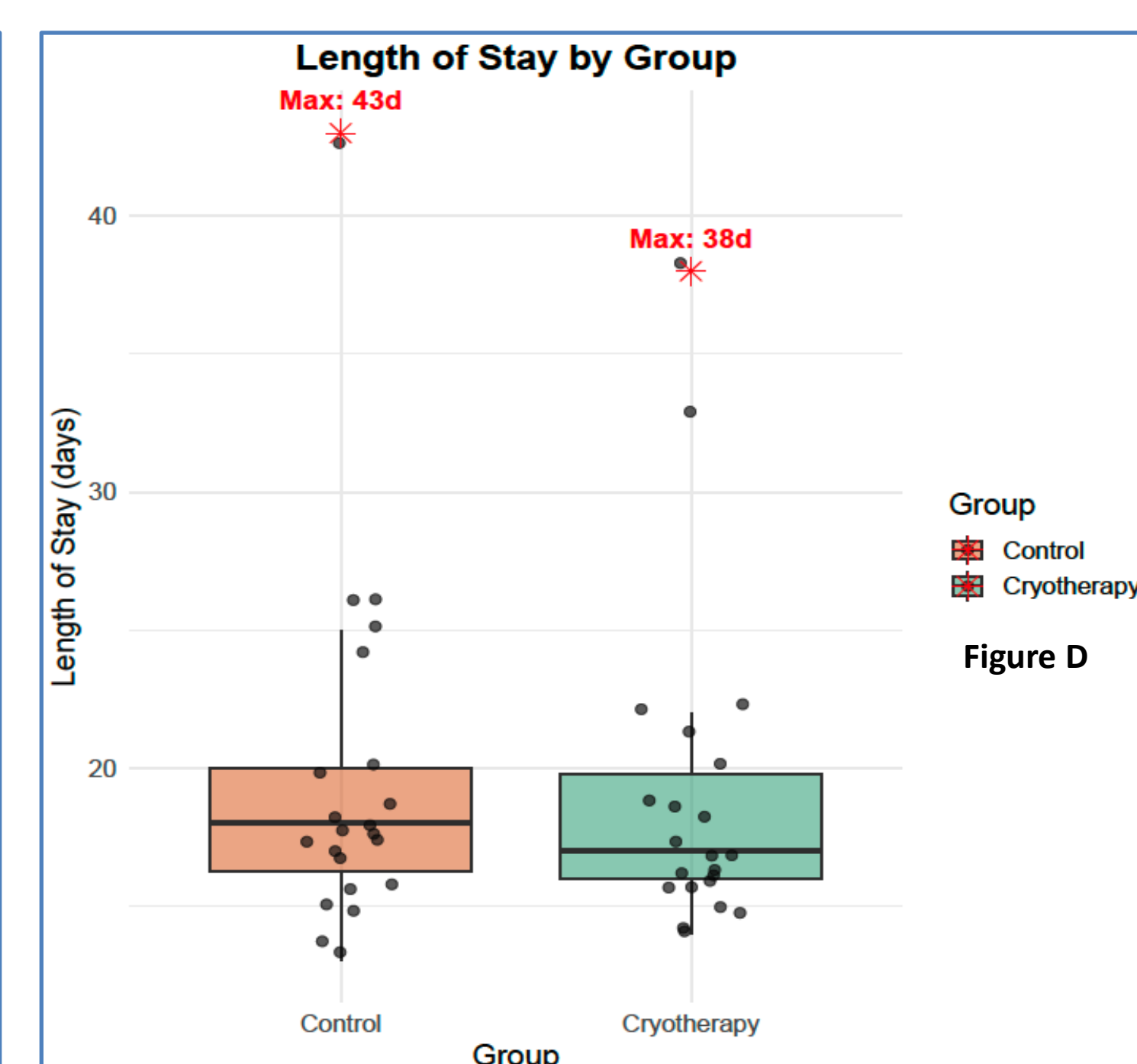
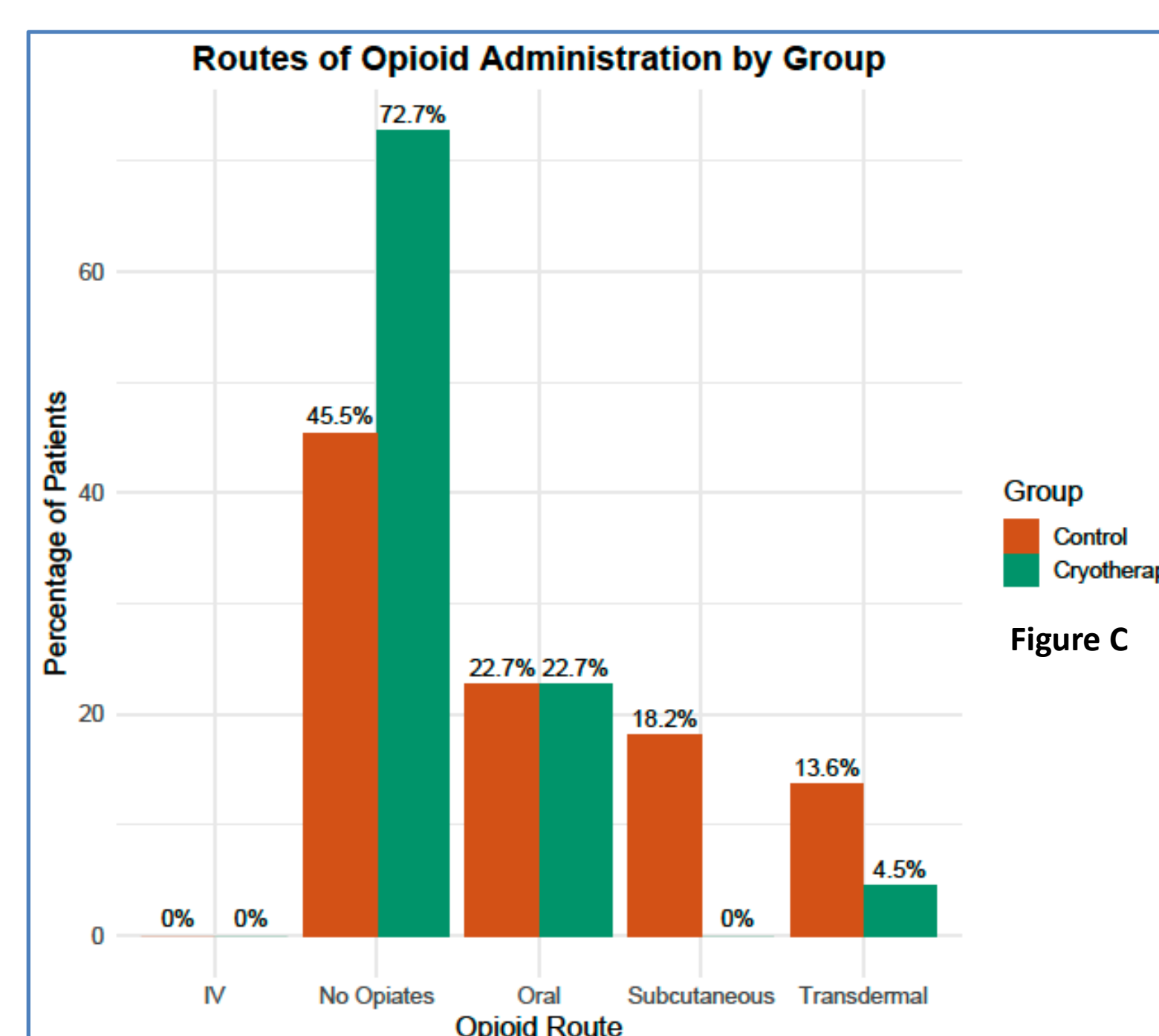


## Conclusion & Limitations

- Oral cryotherapy is a safe, simple, and low-cost method to reduce OM in patients undergoing melphalan-based autologous stem cell transplantation.
- The cryotherapy group had a **significantly lower OM incidence** than controls.
- Trends toward reduced opiate use, shorter hospital stays, and lower febrile neutropenia rates were noted but were not statistically significant.
- **Limitations:**
- Small sample size.
- OM grading was unavailable in controls due to inconsistent retrospective documentation.
- Some cryotherapy patients may have received opiates for other reasons (e.g., myeloma-related bone pain), limiting interpretation of opiate use.

## Results

- **Oral mucositis (OM)** incidence was significantly lower in the cryotherapy group (40.9%) compared to controls (86.4%) ( $p = 0.0048$ ) (Figure A), suggesting that cryotherapy may be effective in reducing OM occurrence during melphalan-based conditioning.
- Among cryotherapy patients who developed OM, most cases were mild (Grade 1: 55.6%, Grade 2: 33.3%, Grade 4: 11.1%), indicating a potential reduction not only in incidence but also in severity.
- **Opiate use** was lower with cryotherapy (27.3% vs. 45.5%), but not statistically significant ( $p = 0.35$ ) (Figure B). This may reflect a trend toward reduced analgesic requirements.
- **Opioid administration routes** differed between groups: cryotherapy patients primarily received oral opioids, while the control group showed greater reliance on subcutaneous and transdermal routes. No intravenous opioids were required in either group. The difference in route distribution was not statistically significant ( $p = 0.093$ ) (Figure C), but may suggest a higher analgesic burden in controls.
- **Mean hospital stay** was similar: 18.3 days (cryotherapy) vs. 19.1 days (control) ( $p = 0.50$ ) (Figure D).
- **Febrile neutropenia** was less common in the cryotherapy group (59.1% vs. 77.3%), but without statistical significance ( $p = 0.33$ ) (Figure E).
- **Albumin drop** was slightly lower with cryotherapy (8.04 g/L vs. 9.18 g/L). Suggesting a possible trend toward less nutritional compromise, though formal statistical testing was not performed



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