**Remimazolam for Procedural Sedation in the Emergency Department: A Prospective Study of Effectiveness and Patient Satisfaction**

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**Abstract**

**Background:**

Remimazolam (RM) is a novel ultra-short acting benzodiazepine. This study evaluates the safety of using RM for procedural sedation in the emergency department (ED) by registered nurse anaesthetists versus physicians without previous anaesthesiologic specialisation. Secondary aims were patient satisfaction and proportion of successful procedures.

**Methods:**

This prospective clinical study was performed at the ED at Aalborg University Hospital from May 10 through 20 August 2024. Five non-specialised physicians (group 1) started administering RM to patients after completion of training and direct supervision of patient treatment. Results were compared to patients sedated by two registered nurse anaesthetists (group 2) who had been administering RM more than 50 times before study start. Time was recorded during sedation and a questionnaire filled out immediately after the patient had awakened. T-tests or Mann-Whitney U tests were used to compare groups. Proportions were calculated with $CHI^2$-test of proportion.

**Results:**

In group 1, 53 patients were sedated by non-anaesthesiological physicians, and in group 2, 50 patients by registered nurse anaesthetists. No or mild respiratory adverse effects were observed in 97% of patients in group 1 versus 100% in group 2. Procedural amnesia was 93% in group 1 versus 90% in group 2. Patients were safe to be left unsupervised after a median of 15 minutes in both groups. Procedure success was 92% in group 1 versus 100 % in group 2.

**Conclusion**

Severe respiratory adverse effects after sedation were approximately similar in both groups. Most patients had amnesia and adequate pain relief for the procedure. The use of RM by physicians without anaesthesiologic specialisation is considered a safe and effective alternative for procedural sedation in the ED.

**Trial registration**

The study was registered and approved as a quality study (ID 2017-011259) by the hospital administration.

**Keywords:** Deep Sedation; Benzodiazepines; Anaesthesia; Analgesia: Emergency Service; Hospital, Emergency Medicine