

Innovation in Ophthalmic Drug Delivery: Efficacy of Eyedrop Applicator

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Abstract

Proper administration of ophthalmic medications is crucial for effective treatment. However, elderly patients often struggle with reduced hand coordination, tremors, and vision impairment, leading to inaccurate dosing, increased wastage, and poor adherence, ultimately affecting clinical outcomes. This study evaluates the effectiveness of a novel eye drop applicator in enhancing precision, reducing errors, and improving patient compliance.

A prospective study was conducted with 50 patients aged 75 and above. The study was divided into two phases:

Weeks 1-2: Patients administered eye drops manually without an applicator.

Weeks 3-4: Patients used the eye drop applicator for medication administration.

A structured questionnaire was used to assess patient experiences before and after using the applicator. The study focused on four key factors:

1. Frequency of use (adherence rates)
2. Ease of administration (difficulty levels before vs. After)
3. Wastage reduction (drops lost during application)
4. Overall patient satisfaction

The results indicated a significant improvement with the applicator. Patients reported reduced difficulty, minimal wastage, and increased confidence in self-administration. These findings highlight the potential of assistive devices in ophthalmic drug delivery, particularly for elderly patients who struggle with manual application. This study suggests that eye drop applicators can enhance treatment efficacy and patient compliance. Further research should focus on refining applicator designs, expanding their use across different patient groups, and evaluating long-term benefits to optimize ophthalmic drug delivery outcomes.