

Enhancing Pharmacy Employees' Competence in Injection Pen Administration to Improve Diabetes Management and Patient Safety

From knowledge gaps to confident counselling
– improving injection pen use in Danish community pharmacies

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Background

Patient safety is a critical concern in diabetes management, particularly regarding the correct use and administration of injection pens. Medication errors, including incorrect dosing and improper injection techniques, can lead to severe consequences such as hypo- or hyperglycemia. Pharmacy employees play a vital role in patient education and error prevention, through new medicine services and compliance services at the pharmacy. However, gaps exist among pharmacy employees regarding the knowledge of correct use and administration of injection pens. Enhancing their competence through targeted training programs can improve patient outcomes, reduce medication errors, and ensure safer injections. By strengthening the role of pharmacy employees in diabetes care, healthcare systems can support better adherence, optimize therapy, and enhance overall patient safety. Not only pharmacies experience challenges in treating this type of patient, but also specialized centers, such as the Steno Diabetes Center Copenhagen. In order to approach this subject, a unique collaboration between the pharmacies and Steno Diabetes Center Copenhagen, for further understanding has been initiated.

Purpose

The primary objective of this project is to enhance the knowledge and skills of pharmacy employees in the correct use and administration of injection pens for diabetes patients and for patients using GLP-1 analogues. This will be achieved through a comprehensive training program designed to improve patient safety by minimizing medication errors such as incorrect dosing and improper injection techniques. We hypothesize that by training pharmacy employees with the necessary competencies and practical knowledge, the likelihood of injection-related errors will be reduced, leading to better patient outcomes, optimized diabetes management, and enhanced adherence to therapy. The project aims to bridge existing gaps in pharmacy employees' understanding, strengthen their role in diabetes care, and ultimately contribute to safer and more effective injection administration in diabetes patients.

Methods

A pre- and post-training study design will be used to assess the effectiveness of an e-learning training program for pharmacy employees. The training, developed by Steno Diabetes Center in collaboration with Sønderbro and Glostrup community pharmacies, focuses on injection pen use, dosing accuracy, injection techniques, and error prevention. At first, pharmacy employees will complete a baseline questionnaire to assess their knowledge of injection pen administration and diabetes care. The e-learning program includes interactive modules, instructional videos, and knowledge checks, and is accessible to all participating employees online. Upon completing the program, employees will retake a similar questionnaire to evaluate improvements in their knowledge. Comparisons between pre- and post-training assessments will identify knowledge gains and areas requiring further attention.

Results

A total of 39 pharmacy employees completed the baseline survey and 25 completed the post-training evaluation. Before the training, employees reported limited confidence in counselling on injection pens, often perceiving that patients "already had everything under control". During the intervention, the e-learning module provided structured knowledge, and morning meeting exercises with practical pen training increased hands-on confidence. In figure 1, the implementation of the e-learning module is presented. Figure 2 and 3, breaks down the submissions to a questionnaire presented to the e-learning module participants. After training, 100% felt more confident advising on preparation and injection technique, 96% on disposal, 88% on storage, and 71% reported greater job satisfaction. Employees also experienced increased patient engagement and felt better equipped to provide safe and practical counselling.

Conclusion

This collaboration between Steno Diabetes Center Copenhagen and community pharmacies demonstrated that a targeted e-learning program can significantly strengthen pharmacy employees' competence in injection pen administration. Following the training, 100% of participants felt more confident advising on preparation and injection technique, and over 95% reported increased confidence in disposal and storage counselling. Moreover, 88% experienced greater patient engagement and 71% reported improved job satisfaction. These results highlight the potential of structured training to improve patient safety, reduce medication errors, and support pharmacy employees in their counselling role. The project may serve as inspiration for other pharmacies to implement similar initiatives.

1 - Pre training

I feel insecure in my counselling

Patients usually have it under control – it's difficult to know what I can add

2 – E-learning module

Refreshing knowledge about the disease and injection technique

Better and more customer-centric understanding before consulting

3 - Morning meeting exercises

It's great to be able to provide more in-depth advice to the customer

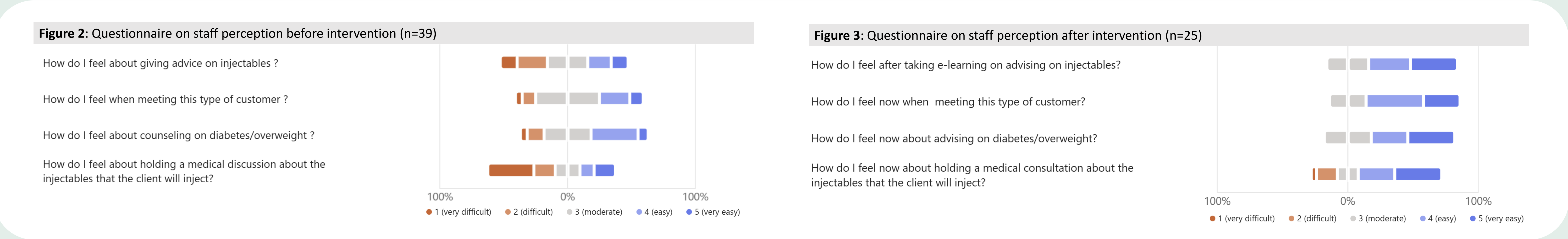
I'm so ready for a compliance interview with the injection technique. I used to fear those

4 – Post training

I feel better prepared with advice and knowledge behind it.

Now I can tell my customers what it's like to get an injection – that it doesn't hurt

Figure 1: As presented in the storyboard above, the pharmacy staff may face the challenge of providing more useful information to customers and expanding upon the existing knowledge that the customer already has. The implementation of the e-learning module aims to expand and affirm subject knowledge and lay a stronger foundation of understanding in injection pen usage. The e-learning module is supplemented by meeting exercises, which aims to cement and elaborate on the content presented in the online module. This leading to more secure and competent counselling, providing excellent value for the customers using injection pen. The quotes are the participants' responses to the questionnaires.



This project originated from a collaboration between Steno Diabetes Center Copenhagen and the Danish Association of Pharmacies, Capital Region branch, with the aim of developing e-learning and supporting materials for pharmacy staff. København Sønderbro Apotek and Glostrup Apotek contributed to the development and pilot testing of the materials.