

A Comparison of Dosing Accuracy: Visually Impaired and Sighted People Using Insulin Pens

Ann S. Williams, Ph.D., R.N., CDE,¹ and Patrick A. Schnarrenberger, B.A.²

Abstract

Background:

In the United States, 18% of people with diagnosed diabetes have visual impairment. Insulin pens are widely used by both blind and sighted people. However, major manufacturers include a disclaimer in the instructions warning against use by visually impaired people, without giving a rationale. Published studies neither support nor refute the disclaimer.

Method:

The purpose of this study was to compare accuracy of dosing with insulin pens between visually impaired and sighted people. Inclusion criteria were self-reported diabetes and inability (visually impaired group) or ability (sighted group) to read regular print. The sole exclusion criterion was inability to pass a brief test of decisional capacity. Each participant received standardized instructions for insulin pen use, either in recorded (visually impaired group) or in printed (sighted group) format, and delivered 10 systematically varied doses into an injection ball, which was weighed on a precision laboratory balance.

Results:

No significant correlation with accuracy of insulin dosing was found for any of the analyzed variables: visual status, age, gender, years of having diabetes mellitus (DM), or treatment of DM with or without insulin.

Conclusions:

This study provided preliminary evidence of the safety of use of insulin pens by visually impaired people and raised questions about the validity of the disclaimer. Further study of the safety of use of insulin pens by blind people is needed. Inclusion of people with disabilities in research on technology intended for patient use would ensure that people with disabilities can benefit from new technology.

J Diabetes Sci Technol 2010;4(3):514-521

Author Affiliations: ¹Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, Ohio; and ²University of Wisconsin, Madison, Wisconsin

Abbreviations: (DM) diabetes mellitus, (DSM) diabetes self-management, (NFB) National Federation of the Blind, (UD) universal design

Keywords: blindness, disability, dosing accuracy, insulin pen, universal design, visual impairment

Corresponding Author: Ann S. Williams, Ph.D., R.N., CDE, Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, OH 44106; email address ann.s.williams@case.edu