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Protocol on Community Pharmacists' Knowledge on the Appropriate use of Insulin Pen in South East Nigeria: A Mixed Method Approach

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ABSTRACT

Community pharmacists, being easily accessible, are key in advising diabetic patients on insulin pen use. This study assesses their knowledge of proper insulin pen use/storage to improve diabetes management. The researcher will evaluate registered pharmacists via a simulated patient approach. Data will be analyzed using t-tests/ANOVA (SPSS v25)

Keyword: Insulin Pen, Diabetics Mellitus, Community Pharmacist

INTRODUCTION

Diabetic Mellitus, a metabolic syndrome with high blood glucose, results from insufficient insulin or insulin resistance [1,2]. Types 1 & 2 DM require strict glucose control to prevent complications [1,3-5]. Effective DM management needs assessment, monitoring, and patient education [6-10]. Insulin therapy aims to reduce blood sugar and prevent long-term damage [11], often via insulin pens.

Insulin pens offer advantages over vials/syringes: improved satisfaction, adherence, ease of use, accuracy, acceptability, and less pain [12]. Incorrect pen use can cause glucose irregularities, pain, lipohypertrophy, and infection [13,14]. Proper technique is crucial [14].

Developing countries often lack resources for comprehensive DM care[15]. Poor adherence, complex regimens, and communication issues hinder control[14-17]. Community pharmacists are vital in DM management due to their accessibility and required education[18-20].

Pharmacists' roles has consistently evolve which includes patient education on chronic disease management[19,20]. Community pharmacists are well-placed to improve patient access to care [1415,20], highlighting the need to assess their insulin pen knowledge[14-20].

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METHOD

Study Design

Sixty (60) community pharmacists will be sampled via stratified random selection from ~300. Two students will use a modified Nduka *et al*. (2016) [17] simulated patient approach, employing Couturier's (2023)[18], 15-step insulin pen instructions.

1. Community pharmacists should start washing their hands.
2. Get an insulin pen, needle, and alcohol swabs.
3. Choose injection location.
4. Remove the insulin pen cap, wash the rubber with an alcohol swab, and let it dry. No blow-drying to prevent contamination.
5. Remove and twist a new pen needle's paper tab. A new pen needle should be used for each injection.
6. Remove needle cap and shield.
7. Priming a fresh pen includes dialing up 1–2 units and pushing the injection button to remove air bubbles.
8. Set the dosage counter to the injection number.
9. Wipe and air-dry the selected injection location using an alcohol swab.
10. Insert the needle directly into the skin at 90 degrees.
11. Pressing the injection button releases insulin.
12. The needle is inserted and the button held down for a few seconds to give the whole insulin dosage.
13. Remove the needle after a few seconds, pulling the pen straight out at 90 degrees.
14. Carefully recap, twist off, and drop the pen needle in a trash receptacle.
15. The insulin pen may be capped after injection.

Students simulate newly diagnosed diabetics needing insulin pen training. Buddies record pharmacist demos (correct/incorrect) on coded forms and collect sociodemographic data for review.

The Study Setting

This pharmacy-based cross-sectional study will be carried out from July 2024 to May 2025 in Enugu metropolis, Enugu state in south eastern part of Nigeria, Enugu state which is popularly known as the Coal City State, and Igbos are the most indigenous ethnic group. Enugu metropolis was purposively selected since different cadres of pharmacies operate in the city.

Sample Size

In Enugu, at the time of conducting this study it was reported by Pharmacy Council of Nigeria that there are 300 pharmacists and 147 licensed pharmacies. A sample of 60 pharmacies was deemed sufficient for a 95% confidence survey. Stratified sampling across high, middle, and low socioeconomic areas was used. Enugu metropolis was divided into 10 clusters, randomly selecting 6 pharmacies per cluster for visits namely**:** Abakpa, Achara layout, Coal camp, GRA, Independence layout, New-Heaven, Ogbete, Ogui, Trans-ekulu and Uwani, from which six community pharmacies will be randomly selected from each stratum.

Eligibility Criteria

The research will include PCN-registered community pharmacies employing licensed pharmacists (full- or part-time). Pharmacists declining participation or not working in community pharmacies will be excluded.

Statistical Analysis

SPSS 25 will be used for data imputation. Demographic frequencies and average pharmacist demographic scores will be calculated. ANOVA will test if gender, age, and experience affect insulin pen demonstration skills ($p<0.05$). Chi-square will assess the impact of insulin pen training ($p<0.05$)

Ethical Consideration

The Health Research Ethics Committee of the University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu, Nigeria, will approve the research, and participant and pharmacy confidentiality will be maintained throughout the trial.

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