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Protocol for evaluating the outcome of nurse-led education on coping skills and quality of life among diabetes patients in Kaduna State, Nigeria

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Abstract

The available empirical data on awareness and management of diabetes indicate health seeking behaviour lower than the level of good knowledge. Whether nurse-led education on coping strategies for people living with diabetes could yield better quality of life has yet to be investigated. The objective of this study is to evaluate the outcome of nurse-led education on coping skills and quality of life among diabetes patients compared to usual care. The significance of the study is to generate empirical evidence that could potentially motivate health seeking behaviour among patients, or review of service provision by healthcare professionals and providers.

Introduction

1 This chapter presents the methodology used in this study to investigate the outcome of nurse-led education on coping skills and health-related quality of life among diabetes patients in selected secondary healthcare facilities in Kaduna State. The chapter provides an overview of the research design, study setting, study population, sample size, sampling technique, data collection instruments, data collection procedure, and data analysis plan.

There is research report from Kaduna state (Hamoudi et al., 2012), which indicate more than half of the population may lack good knowledge about diabetes symptoms and/or complications (Fig 1), while over one-third of the individuals living with diabetes mellitus lack adequate knowledge and practice necessary for diabetes self-management (Fig 2).

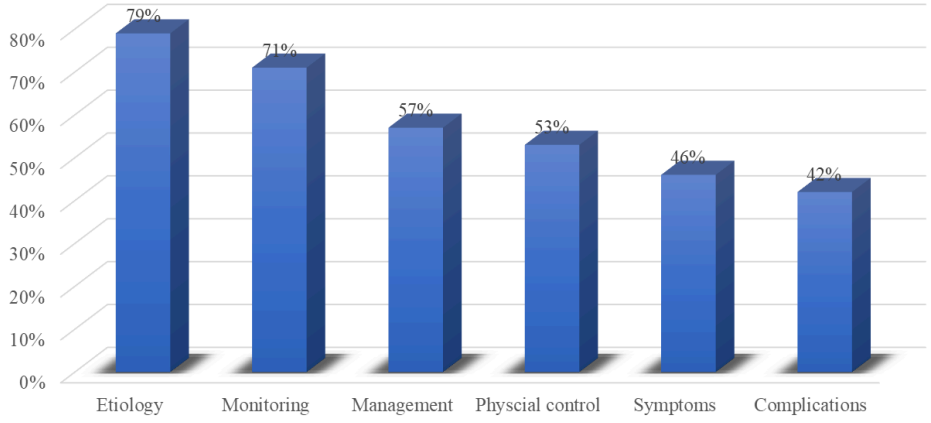

Fig 1: Levels of good knowledge about diabetes in cross-sectional population

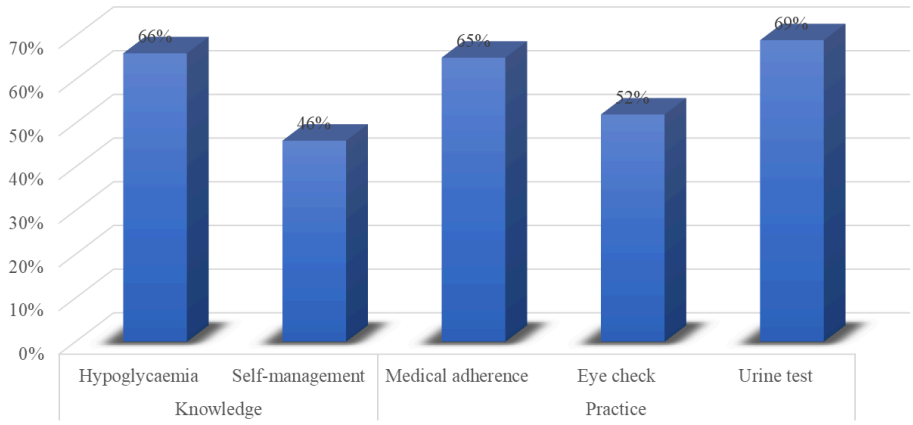

Fig 2: Levels of knowledge and practice among diabetes cohort

In a more recent corroborating report (Anyanti et al., 2021), evidence suggests that unlike with hypertension, about one-third of those who have good knowledge of diabetes do not seek medical check up (Fig 3). This reported observation constitutes empirical evidence of public health concern, and a need to advance or seek other strategies for improving health-seeking behaviour.

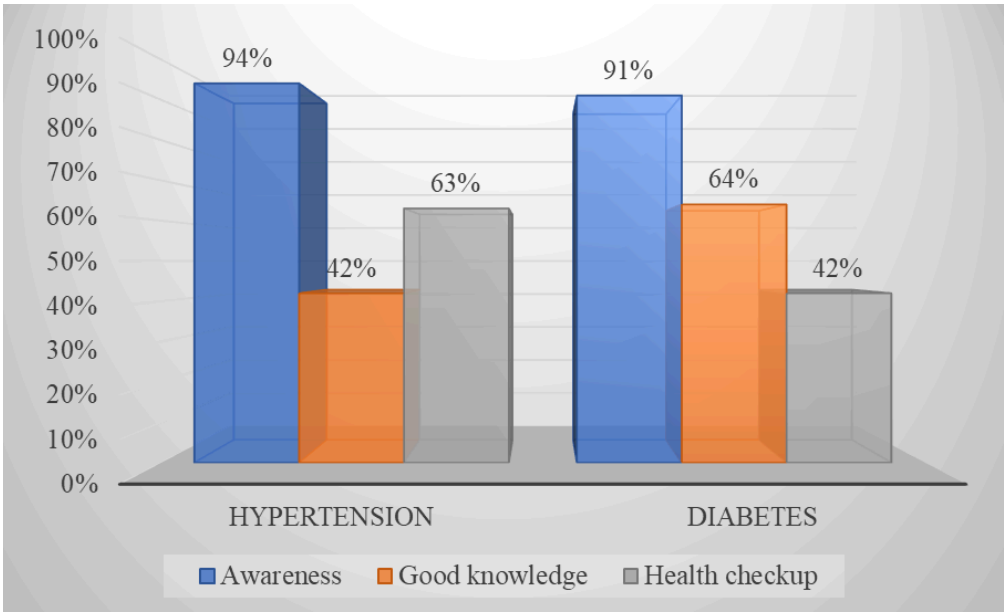

Fig 3: Recent report of knowledge and practice on diabetes self-management

However, existing coping strategies and quality of life in the target population would need to be re-established. Comparison between those seeking healthcare service versus non-seekers may also be beneficial to establish. In the principle of *community needs assessment* (Centers for Disease Control and Prevention, 2010), the effects of current health education versus being provided by primary healthcare nurses could yet be another necessary preliminary study. Hence the objective of this study is to evaluate the nurse-led education on coping skills and quality of life among diabetes patients.

Specific objectives

Table 1. Research objectives and the hypothesis

Objectives	Hypothesis
To examine coping strategies among diabetes mellitus patients	Diabetes mellitus patients utilize various coping strategies in order to manage the physical, emotional, and social impacts of their condition.
To determine the quality of life among diabetes mellitus patients	There will be a significant difference in the quality of life among individuals with diabetes mellitus compared to those without the condition.
To examine the relationship between coping strategies and Quality of Life in diabetes mellitus patients	There is a significant correlation between coping strategies and Quality of Life in individuals with diabetes mellitus, with more effective coping strategies leading to a higher Quality of Life.
To determine the outcome of nurse led education	Providing nurse-led education will positively impact patient outcomes.

The Protocol

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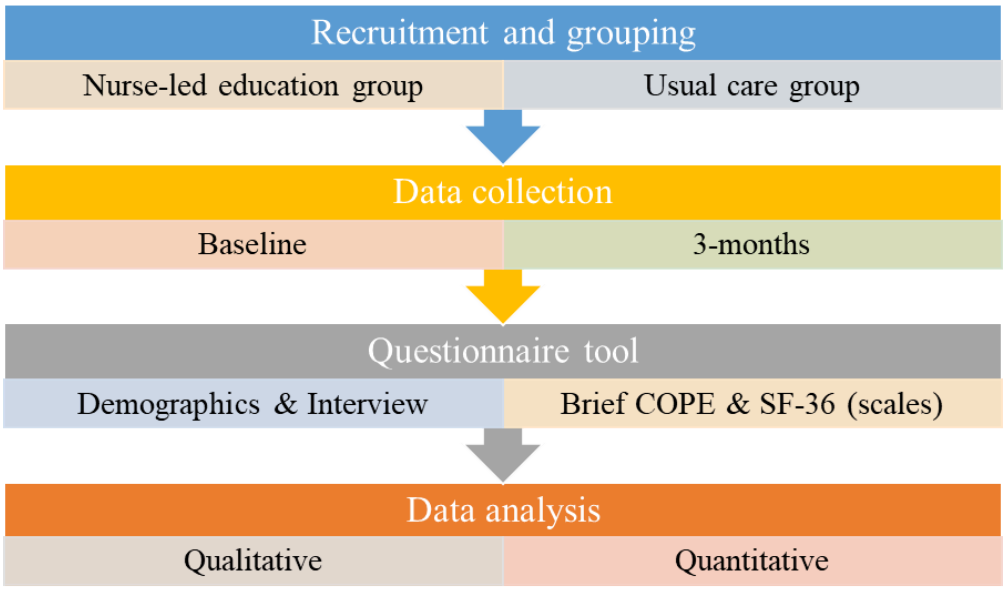

Fig 4: Graphical overview of mixed-methods intervention nature of study

Research Design: This study would employ a quasi-experimental design, specifically a pre-test post-test control group design. This study involves comparing an intervention group that receives nurse-led education to a control group that receives usual care (Fig 4). Pre- and post-intervention measurements will be taken to assess changes in coping skills and health-related quality of life (HRQoL). A purposive sampling technique will be used to recruit participants for the study. Further details of the mixed methods is presented in table 2.

Table 2. Specific objectives versus research designs

Objectives	Methods	Research designs	Statistics
To examine coping strategies among diabetes mellitus patients	Qualitative analysis	Cross-sectional	Thematic analysis
To determine the quality of life among diabetes mellitus patients	Quantitative analysis		Descriptive analysis Inferential analysis
To examine the relationship between coping strategies and Quality of Life in diabetes mellitus patients	Quantitative analysis	Correlational study	Descriptive and inferential statistics
To determine the outcome of nurse led education	Quantitative analysis	Pre- and post-test comparison* (Hapunda, 2022)	t-tests, chi-square tests, and regression analysis

*Including evalustion of consideration of diabetes self-management as in adopted report (Hapunda, 2022)

Study Setting: The study will be conducted in selected secondary healthcare facilities in Kaduna State, Nigeria. These facilities will be purposively selected based on their capacity to provide diabetes care and the availability of nurses trained in diabetes education.

Study population: The study population consisted of adult diabetes patients who were receiving care at the selected secondary healthcare facilities.

The selection criteria: These included the following considerations:

1. ***Facility Type***: Secondary healthcare facilities known for providing diabetes care.
2. ***Geographical Distribution***: Facilities will be selected from different regions of Kaduna State to ensure a
3. representative sample.
4. ***Availability of Nurses***: Facilities with nurses trained in diabetes education or willing to undergo training for the study.
5. The other selection criteria are listed in figure 5.

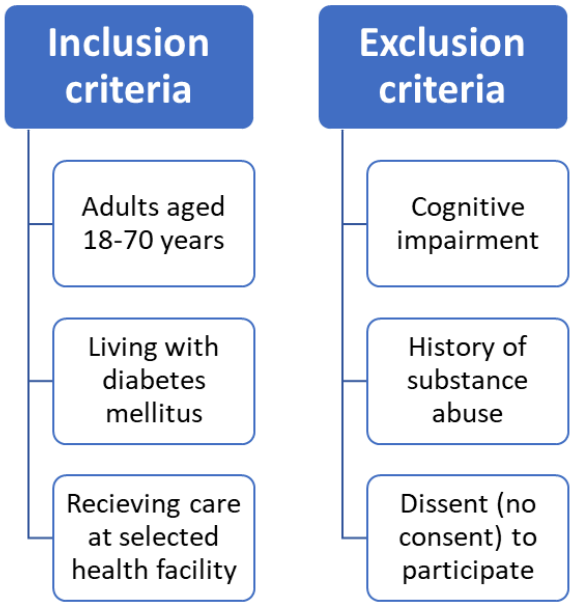

Fig 5: Selection criteria for participant to be recruited in the study.

Sample Size: The sample size will be calculated using the formula for comparing two means in a non-equivalent control group design. A minimum sample size of 100 participants per group (intervention and control) will be targeted to ensure adequate power to detect significant differences in outcomes.

Nurse-Led education intervention

***Development of educational materials*:** The educational materials will be developed based on current guidelines and best practices for diabetes management. Materials will include information on diabetes management, coping strategies, lifestyle modifications, and the importance of adherence to treatment regimens.

***Training of nurses*:** Nurses will be trained on the educational materials and techniques for delivering the intervention. Training will include communication skills, patient education strategies, and addressing common patient concerns.

***Delivery of education*:** The intervention will be delivered over a period of 3 months. Sessions will be conducted individually or in small groups, depending on patient preference and facility capacity. Each session will last approximately 30 minutes and will cover different aspects of diabetes management and coping skills.

Control Group: The control group will receive **usual care**, which includes routine diabetes management

and education provided by healthcare professionals at the facility. No additional nurse-led education intervention will be provided to the control group.

Data

3 **Baseline Data**

***Demographic information*:** Age, gender, education level, occupation, marital status, and duration of diabetes.

***Clinical information*:** Type of diabetes, current medications, comorbidities, and recent HbA1c levels.
***Baseline measurements*:** Coping skills will be assessed using the Brief COPE inventory (Carver, 1997), and HRQoL measures would adopt the SF-36 Health Survey (Degu et al., 2019; Hooker, 2013).

Brief COPE inventory: This validated tool measures different coping strategies and their effectiveness. It consists of 28 items, with each item scored on a 4-point Likert scale ranging from "I haven't been doing this at all" to "I've been doing this a lot."
SF-36 Health Survey: This widely used tool measures various dimensions of HRQoL, including physical and mental health. It consists of 36 items, with each item scored on a 5-point Likert scale.

Post-Intervention Data
Post-intervention measurements of coping skills and HRQoL will be taken at 3 months post-intervention using the same tools. Any adverse events or unintended consequences of the intervention will also be recorded.

Statistical analysis

4 **Quantitative**
Mean, standard deviation, frequency, and percentage will be used to describe the study population and outcomes.
***Paired t-tests*:** Will be used to compare pre- and post-intervention scores within groups.
***Independent t-tests*:** Will be used to compare differences in scores between the intervention and control groups.
***Analysis of Covariance (ANCOVA)*:** Will be used to control for baseline differences between groups.
Logistic regression: Will be used to assess effects of intervention on Quality of Life effects and diabetes self-management.

Qualitative
Qualitative data from patient interviews or open-ended questions will be analyzed using thematic analysis. Themes will be identified and coded to provide insights into the experiences and perceptions of patients regarding the intervention.

Ethics approval

5 Ethical approval will be obtained from the Institutional Review Board (IRB) of the participating healthcare facilities and the ethical committee of Kaduna State Ministry of Health. Written informed consent will be obtained from all participants before enrollment in the study. All data will be collected and stored confidentially.

Participants will be assigned study IDs to ensure anonymity. Participants will be informed of their right to withdraw from the study at any time without any consequences.

Study limitation

6 **Selection Bias:** The non-randomized nature of the study may introduce selection bias.
Generalizability: The study will be conducted in a specific geographical area, which may limit the generalizability of the findings.
Study Duration: The study period may not be sufficient to capture long-term effects of the intervention.

Conclusion - Significance of study

7 Despite the knowledge and prevalence of diabetes in Kaduna State, there is a limited understanding of the outcome of nurse-led education on coping skills and health related quality of life among diabetes patients. This study aims to address this gap in knowledge. The findings of this study will contribute to the evidence base on the effectiveness of nurse-led education in improving coping skills and health related quality of life among diabetes patients. The findings will provide valuable insights for policy makers, healthcare professionals, and patients on the role of nurses in diabetes management.

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