Effect of Nurse-led Training on Self-management of Diabetes among Diabetic Patients Attending Medical Outpatient Clinic in General Hospital Odan, Lagos State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author OTE designed the study and wrote the first draft of the manuscript. Author NC managed the literature searches. Author AF performed the statistical analysis. Author OO wrote the protocol. Author AAM managed the analyses of the study. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

Aims: Diabetes mellitus is a common metabolic disease associated with poor quality of life and great financial burden. Despite training on self-management of diabetes mellitus, its knowledge and practice among diabetic patients has been low. The study assessed the effect of nurse-led training on self-management of diabetes mellitus among diabetic patients attending the medical out-patient's clinic of General Hospital Odan, Lagos, Nigeria.
Study Design: One group pre-test, post-test quasi-experimental study was adopted.
Methodology: Researchers included 20 diabetic patients (12 men, 8 women; age range 25-65 years) attending medical outpatient clinic of the hospital using purposive sampling. Participants

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completed a developed questionnaire to assess knowledge and practice regarding diabetes self-management pre-intervention and two weeks post-intervention. Data were analysed using descriptive and inferential statistics at 0.05 level of significance.

Results: There was 70% increase in knowledge regarding diabetes self-management among participants post-intervention. There was 45% increase in practice regarding diabetes self-management among participants post-intervention. Result showed significant difference in the effect of a nurse-led training on knowledge regarding self-management among diabetic patients pre and post-intervention with a mean difference in knowledge score of 14.2 *(P=.000)*. Result also showed significant difference in effect of nurse-led training on practice regarding self-management among diabetic patients pre and post-intervention with a mean difference in practice score of 1.05 *(P= .000)*.

Conclusion: Training program on self-management of diabetes can improve diabetic out-patients knowledge and practice regarding diabetes self-management. The study recommended that hospitals should regularly expose patients to training programmes on diabetes self-management to improve patients' quality of life.

1. INTRODUCTION

Diabetes mellitus is a metabolic disease in which glucose level in the blood is high over an extended period. It is a common metabolic disorder associated with poor quality of life and great financial burden [1]. In 2013, 4.6 million people died of diabetes mellitus worldwide [2]. Under developed and developing countries worldwide are more affected by diabetes mellitus with more than 77 % morbidity and 88 % mortality. The prevalence rate of diabetes mellitus worldwide is43.2% [3]. Diabetes mellitus prevalence among adults worldwide in 2014 was 39% [4]. The prevalence of diabetes mellitus in Nigeria increased from 2.2% to 5.0% by 2013 [5]. Complications of diabetes mellitus is common at the time of presentation in Nigeria with 56% neuropathy, 36% erectile dysfunction, 9% nephropathy and 7% retinopathy [6].

Glycemic control at the suboptimal level among diabetic patients increases care requirement, complications and related health care costs. Improper glycemic control has been linked with increased risk of visual impairment, kidney failure and cardiovascular disease [7]. Emphasis has been on the importance of patient education for better outcomes of self-management of diabetes and patient education is necessary because it promotes high quality diabetic care. Diabetic education programmes stress the importance of patients comprehending the practical approach to diabetes self-management. Knowledge and understanding are important in helping patients towards better self-management of diabetes mellitus [8].

Diabetes Mellitus has significantly contributed to the reduction of life expectancy by 15 years and have increased heart disease incidence by four times worldwide. In Nigeria, diabetes mellitus contributes to medical morbidity and mortality by 30% [9]. A study in Malaysia showed 72 % of diabetic out-patients had poor glycemic control and diabetes mellitus [10]. This study showed high prevalence of diabetes mellitus amongst diabetic outpatients which may be due to poor knowledge and practice concerning self-management of diabetes mellitus.

In Nigeria, up to 73% of diabetic outpatients has poor knowledge and practice regarding diabetes self-management despite exposure to trainings and health education on diabetes self-management [6,11]. The researcher through clinical experience has observed high prevalence of hyperglycaemia among diabetic outpatients. These suggest a fundamental problem which may be attributed to inadequate exposure of diabetic outpatients to training programmes concerning diabetes self-management. These may also be attributed to a gap in the type of training programmes offered to diabetic outpatients on diabetes self-managementas no previous quasi-experimental study combined lecture and discussion method. Hence, the need for a study on effect of nurse-led training on self-management of diabetes among diabetic patients attending medical outpatient clinic in General Hospital Odan, Lagos.

The researcher studied the effect of nurse-led training on self-management of diabetes mellitus among diabetic patients attending the medical out-patient's clinic of general hospital odan

Lagos. Patients would benefit from this study as the training programme would improve patients knowledge and practice of diabetes mellitus self-management. It would positively influence the prevalence, morbidity and mortality rate associated with diabetes mellitus. It would enhance quality of life and reduce diabetes burden globally through adequate diabetes self-management. The hospital management would benefit from the study as it would positively influence the utilization of hospital resources.

2. METHODOLOGY

2.1 Study Design

The study adopted one group pre-test, post-test quasi-experimental study to assess the effect of nurse-led training on self-management of diabetes among diabetic patients attending medical out-patient clinic in General Hospital Odan, Lagos between October 2016 and March 2017.

2.2 Population

The population was 60 diabetic patients attending diabetic clinic of the medical outpatient unit of the hospital. Individuals diagnosed of diabetes mellitus for not less than three months.

2.3 Sample Size and Sampling Technique

Sample size was determined using Leslie Kish formula.Purposive sampling technique was adopted to select 20 diabetic patients from the medical outpatient clinic of General hospital Lagos for the study.

2.4 Instrumentation

The instruments used for data collection were a developed questionnaire consisting of 28 items and structured around knowledge regarding diabetes mellitus and self-care practice which had 7 questions on demographic data, 15 questions on knowledge about diabetes mellitus and 6 questions on self-care activities. Knowledge score of participants below 50% was categorized as poor knowledge level, knowledge score of participants between 50% to 70% was categorized as fair knowledge level and knowledge score of participants above 70% was categorized as good knowledge level. Practice score of participants between 50% to 70% was categorized as fair practice level and practice score of participants above 70% was categorized as good practice level.

A developed training programme base on the feedback obtained from the baseline results with learning module produce for training of diabetic patients on self-management of diabetes mellitus was also implemented. The training program had a module of learning and it was completed within two hour on a clinic day for one week.

The training programme had information on definition and types of diabetes mellitus, symptoms of diabetes mellitus, management of diabetes mellitus with emphasis on self-management and complication of diabetes mellitus. It involved participants ; describing the diabetes disease process and treatment options, incoporating nutritional management into lifestyle, incorporating physical activity into lifestyle, using medication safely and for maximum therapeutic effectiveness, monitoring blood glucose and other parameters and interpreting and utilizing the result for self-management decision making, preventing acute complications as well as chronic complications, developing personal strategies to address psychosocial issues and concerns, developing personal strategies to promote health and behaviour change.

Content and face validation of the instrument was done by a panel of experts in the fields of study. The reliability of the instrument was ascertained using split-half method and Cronbach's alpha reliability coefficient was calculated to be 0.83. The training module was also pre-tested and found suitable for the study.

2.5 Data Collection Procedure

The procedure for data collection involved three phases:

Phase 1: It involved mobilization of participants at the clinic where information about the purpose of the study was stated, course and potential benefits was discussed with the participants. Participants were informed about their rights and how to exit the research at any point during the study. Consent was obtained after which they were asked to complete a developed and structured questionnaire. Internet access, participants, interaction and reference material were not allowed during data collection to avoid external assistance in answering the questions. The researchers stayed with the participants

throughout the period of completing the questionnaire. Completed questionnaires were checked to ensure it was properly filled before retrieval from participants.

Phase 2: One week training program was held with the participants in the clinic. The module was used to train the participants on knowledge and self-care practice regarding diabetes mellitus and was completed within two hour on a clinic day for one week.

Phase 3: A post-test was conducted two week's post-intervention using the same instrument used during the pre-intervention. The researcher administered the questionnaire and data on participant's knowledge and self-care practice concerning diabetes mellitus was collected using the instrument.

2.6 Method of Data Analysis

Data obtained from participants were processed using statistical package for social science (SPSS), version 21. Frequency tables were made and numerical data were expressed. Two research questions were answered using descriptive statistics of percentages, mean and standard deviation. Two hypotheses were tested using inferential statistics of student t-test at 0.05 level of significance.

2.7 Ethical Consideration

Ethical clearance was obtained from Babcock University Health Research Ethics Committee and permission was obtained from the management of General Hospital Odan, Lagos state. Participants were adequately informed about the study and consent was obtained before data was collected. Information obtained from the participants was kept confidential and the right to withdraw from the study at any point by participants was respected.

3. RESULT PRESENTATION

Table 1 shows that majority 7(35%) of participants were between 55-59years ; majority 11(55%) of participants had higher educational qualification; majority 15(75%) of participants were married; majority 12（60%） were males; majority 8(40%) were not civil servants nor traders.

Table 2 shows the level of knowledge of diabetic patient's pre and post-intervention. Result reveals 4(20%) participants had poor knowledge regarding diabetes self-management pre-intervention, 10(50%) had fair knowledge and 6(30%) had good knowledge. Pre-intervention mean knowledge score of participants was 35.55 and standard deviation was 9.52. Result shows 20(100%) participants had good knowledge regarding diabetes self-management post-intervention. Post-intervention mean knowledge score was 49.75 and standard deviation was 0.550. Finding showed 70% increase in participants knowledge regarding diabetes self-management post-intervention when compared with pre-intervention knowledge score.

Table 1. Frequency and percentage showing demographic data of participants

Demographic variables	Diabetic patients n=20	Pre-test	Post-test
Age	25-29 years	2(10%)	2(10%)
	30-34 years	2(10%)	2(10%)
	35-39 years	3(15%)	3(15%)
	40-44 years	1(5%)	1(5%)
	45-49 years	2(10%)	2(10%)
	50-54 years	3(15%)	3(15%)
	55-59 years	7(35%)	7(35%)
Educational qualification	Primary education	4(20%)	4(20%)
	Secondary education	5(25%)	5(25%)
	Higher education	11(55%)	11(55%)
Marital status	Married	15(75%)	15(75%)
	Single	4(20%)	4(20%)
	Divorced	1(5%)	1(5%)
Gender	Male	12(60%)	10(50%)
	Female	8(40%)	10(50%)
Occupation	Civil servant	6(30%)	6(30%)
	Trader	6(30%)	6(30%)
	Others	8(40%)	8(40%)

Table 3 shows the level of practice among diabetic patient's regarding self management pre and post-intervention. Result shows 9(45%) participants had fair practice regarding diabetes self-management pre-intervention and 11(55%) had good practice. Pre-intervention mean practice score of participants was 5.5 and standard deviation was 1.227. Result shows 20(100%) participants had good practice regarding diabetes self-management post-intervention. Post-intervention mean practice score was 6.5 and standard deviation was 0.510. Finding showed 45% increase in participants practice regarding diabetes self-management post-intervention when compared with pre-intervention practice score.

Table 4 shows that pre-intervention mean knowledge score of participants was 35.55 and standard deviation was 9.52 while post-intervention mean knowledge score was 49.75 and standard deviation was 0.550 which showed significant mean difference of 14.2. There is statistically significant difference in effect of nurse-led training on participants knowledge regarding diabetes self-management pre and post-intervention (P = .000).

Table 5 shows that pre-intervention mean practice score of participants was 5.5 and standard deviation was 1.277 while post-intervention mean practice score was 6.5 and standard deviation was 0.510 which showed significant mean difference of 1.05. There is statistically significant difference in effect of nurse-led training on participants practice regarding diabetes self-management pre and post-intervention (P = .000).

Table 2. Descriptive statistics of participants' knowledge regarding self-management

Level of knowledge of diabetic patients regarding self –management					Min, Max score
	Pre-Intervention Mean= 35.55	SD	Post-Intervention Mean= 49.75	SD	
Scoring range	**Level**	**N (%)**	9.52	**N (%)**	0.550	15;50
Above 70%	Good	6(30%)		20 (100)		
50-70%	Fair	10(50%)		-		
Below 50%	Poor	4(20%)		-		
	Total	**20(100)**		**20 (100)**		

Table 3. Descriptive statistics of participant's practice of diabetes self-management

Level of practice of diabetic patients regarding self-management					Min, Max score
	Pre- Intervention Mean= 5.5	SD	Post-Intervention Mean= 6.5	SD	
Scoring range	**Level**	**N (%)**	1.277	**N (%)**	0.510	3, 7
Above 70%	Good	11(55%)		20 (100)		
50-70%	Fair	9(45%)				
	Total	**20(100)**		**20 (100)**		

Table 4. Descriptive and inferential statistics of participants' knowledge of self-management pre and post intervention

Knowledge	N	Mean	SD	SME	M. DIFF	t-value	*P*-value
Pre-intervention	20	35.550	±9.52	2.13	14.2	6.654	.000
Post- intervention	20	49.750	±.550	.123		(19)	

Table 5. Descriptive and inferential statistics of participants practice of diabetes self-management pre and post intervention

Practice	N	Mean	SD	SME	M. DIFF.	t-value	*P*- value
Pre-intervention	20	5.5	±1.277	2.13	1.05	19.25 (19)	.000
Post-intervention	20	6.5	±0.510	0.114			

4. DISCUSSION OF FINDINGS

There were more participants between 55-59years during data collection. This finding agrees with a previous quasi-experimental study in which there were more participants between 55-59years during data collection [12]. There were more participants with higher educational qualification during data collection. This finding agrees with a previous quasi-experimental study in which there were more participants with higher educational qualification during data collection [13]. There were more married participants during data collection. This finding agrees with a previous quasi-experimental study in which there were more married participants during data collection [12]. There were more male participants during data collection. This finding agrees with a previous quasi-experimental study in which there were more male participants during data collection [12]. There were more participants who were neither civil servants nor tradersavailable during data collection. This finding agrees with a previous quasi-experimental study in which there were more participants who were neither civil servants nor traders during data collection [12].

Result shows 70% increase in participants post-intervention knowledge regarding diabetes self-management when compared with pre-intervention knowledge score which is due to participants exposure to training programme on diabetes self-management. This finding supports a previous quasi-experimental study in which result also showed an increase in participants post-intervention knowledge regarding diabetes self-management when compared with pre-intervention knowledge score [12].

Finding shows 45% increase in participants post-intervention practice regarding diabetes self-management when compared with pre-intervention practice. This is due to participants exposure to training programme on diabetes self-management. This finding supports a previous quasi-experimental study in which result also showed an increase in participants post-intervention practice regarding diabetes self-management when compared with pre-intervention practice score [13].

Result shows that participants knowledge regarding diabetes self-management was increased two weeks post-intervention when compared with pre-intervention knowledge which reveals statistically significant difference in the effect of nurse-led training on knowledge regarding diabetes self-management among diabetic patients pre and post-intervention. The finding supports previous quasi-experimental study in which an interactive lecture was used to increase mean knowledge score regarding diabetes self-management among diabetes out-patients which also supported the use of a training programme to improve knowledge regarding diabetes self-management among diabetic patients [12].

Result shows that participants practice regarding diabetes self-management was increased two weeks post-intervention when compared with pre-intervention practice which reveals statistically significant difference in the effect of nurse-led training on practice regarding diabetes self-management among diabetic patients pre and post-intervention.The finding supports previous study in which interactive lecture was used to increase mean practice score regarding diabetes self-management among diabetes patients which also supported the use of a training programme to improve practice regarding diabetes self-management among diabetic patients [13].

5. SUMMARY

The study focused on the effect of nurse-led training on self-management of diabetes among diabetic patients attending medical outpatient clinic in general hospital Odan, Lagos State. There was 70% increase in knowledge regarding diabetes self-management among participants post-intervention. There was 45% increase in practice regarding diabetes self-management among participants post-intervention. The nurse-led training programme was effective in improving diabetes patients knowledge and practice regarding diabetes self-management as participants showed improved knowledge and practice regarding diabetes self-management post intervention when compared with pre-intervention knowledge and practice.

6. CONCLUSION

Training programme on diabetes self-management improves knowledge and practice concerning diabetes self-management among diabetic patients as participants showed improved knowledge and practice regarding diabetes self-management post intervention when compared with pre-intervention knowledge

and practice. The study also achieved a significant difference in post-intervention knowledge and practice concerning diabetes self-management when compared with pre-intervention knowledge and practice. Hence, the nurse-led training programme has significantly improved knowledge and practice concerning diabetes self-management among diabetic patients.

7. RECOMMENDATIONS

Based on findings of the study, the following recommendations are made:

- Hospitals should regularly expose diabetic patients to training programmes on diabetes self-management to improve their knowledge and practice concerning diabetes self-management which is necessary to enhance quality of life.
- Government and hospitals should increase public awareness on diabetes self-management to improve patients' awareness and knowledge which is necessary to reduce diabetes disease burden.
- Nurses should regularly educate diabetic patients on diabetes self-management to improve their knowledge and practice regarding diabetes self-management and enhance their quality of life.

8. LIMITATION OF THE STUDY

The study was also limited by lack of evaluation of the participants two months after the training programme has been implemented.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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