Volume 11, Issue 01, January 2025,
Publish Date: 29-01-2025
Doi https://doi.org/10.55640/ijmsdh-11-01-07

International Journal of Medical Science and Dental Health (Open Access)

EFFECTS OF A DIETARY EDUCATIONAL PROGRAM ON THE QUALITY OF LIFE OF DIABETES MELLITUS PATIENTS IN RIVERS STATE NIGERIA

JOHNSON, NKECHI MARTHA[1], ORDINIOHA, BEST[2], CHINENYE, SUNNY[3]

[1]UNIPORT, School of Public Health
[2]UNIPORT, School of Public Health
[3]University of Port Harcourt Teaching Hospital, Rivers State.

**Corresponding author: Johnson, Nkechi Martha; Johnson_nkechi@uniport.edu.ng*

ABSTRACT

Background: Despite the existence of numerous education programs for diabetic patients in various health centers, patients with diabetes mellitus end up having poor quality of life. The purpose of this study was to ascertain the effects of a dietary educational program on the quality of life of diabetic patients. This study was carried out among patients with Type 2 diabetes mellitus in Rivers State University Teaching Hospital (RSUTH) and University of Port Harcourt Teaching Hospital (UPTH), Rivers State, Nigeria.

Methodology: Using a quasi-experimental design, Rivers State University Teaching Hospital (RSUTH) and University of Port Harcourt Teaching Hospital (UPTH) were selected as the Control and Experimental groups respectively. At baseline, 180 patients were enrolled but at the end of the study 81 in Control Group (CG) and 81 in Experimental Group (EG) were analyzed. CG received personalized meal timetable, and 2 weekly phone call follow up while EG received Dietary education, using cooked and raw food demonstration, personalized meal timetable and 2 weekly phone call follow up. Data was collected using a semi-structured interviewer-administered questionnaire. The statistics analysis was conducted using SPSS version 22 statistical software with a p-value of <0.05 regarded as significant.

Result: Patients' QoL, knowledge and practice was assessed at baseline and six months (P1 & P3). The QoL was classified into "good" and "poor," At P1, EG had better QoL with (EG: 40.7%) while CG had 24%. P =0.001, Q0L at P3 (EG: 54.3%; CG: 30.9%) shows there was an improvement in both groups with p=0.001.

Conclusion: Because of the educational program, the quality of life of the patients was affected positively at the end of the program. However, EG had better quality of life because of the use of food demonstration. Thus, dietary interventional program improved the quality of life of the patients.

KEY WORDS: Diabetes, Mellitus, questionnaire, Experimental, Control, Group.

INTRODUCTION

In spite of the increase of dietary education and the recognition of the benefits of healthy nutrition model, the prevalence of unhealthy nutrition patterns is still increasing among diabetic patients [1]. This increase in unhealthy food pattern leads to poor dietary management of diabetes among diabetic individuals. As a result, the prevalence of diabetes mellitus continues to rocket higher, despite an increase in physical activity [2].

According to Wattana[3], the understanding and practice of dietary management of diabetes is an important part of care for better glycemic control and higher quality of life. Furthermore, more knowledgeable persons with diabetes have better attitude towards the management of their own conditions [4].

Patients with diabetes may feel poor consequences on their quality of life from diabetes and its complications [5]; hence, it is vital to consider the full person as a bio-psychosocial entity when managing diabetes [6]. Quality of Life (QoL) comprises data on patients' psychological wellbeing and is an important outcome in assessing the burden of treatment and the efficacy of diabetes therapy [7, 8].

The purpose of this study was to investigate the effectiveness of a dietary education intervention for patients with T2DM in tertiary health institution in Port Harcourt. At the same time, the level of nutritional knowledge of the patients, effect on their practice and effect on their quality of life were assessed with the aim of improving them.

MATERIALS AND METHODS

Study Design

The research used a quasi – experimental study design with pre intervention and post intervention carried out in the two cohorts of patients suffering from Type 2 diabetes mellitus (DM). The study involved one hundred and sixty-two (162) persons living with type 2 DM purposively recruited from the diabetic clinics of two tertiary health institutions in Port Harcourt, Nigeria. Ethics approval to carry out the research was obtained from the UNIPORT, University of Port Harcourt Teaching Hospital (UPTH) and Rivers State University Teaching Hospital (RSUTH). RSUTH functioned as the control group, while UPTH was assigned to the experimental category. Participants in the experimental group were given personalized meal plan, dietary educational program using physical food demonstration9 and 2 weekly phone call follow up to monitor the adherence to the meal plan. In contrast, Individuals in the Control group were given personalized meal planning, and 2 weekly phone call and dietary educational program without a physical food demonstration. The primary outcomes assessed included knowledge, practice behaviors, glycosylated hemoglobin levels (HbA1c), and quality of life.

Study Area

The Port Harcourt metropolitan area in Rivers State served as the research area. It is located in the southern region of Nigeria.

Study Population

All patients with Type 2 Diabetes mellitus who were 18 years of age or older and enrolled in tertiary hospitals in Rivers State, Nigeria, and who satisfied the following inclusion and exclusion criteria were

included in the target population. The study's findings were applied to diabetes patients in Rivers State, Nigeria, due to cultural and linguistic similarities.

Inclusion Criteria

- ✓ Participants had to be verified T2DM patients with a HbA1c that was higher than normal (7%) for a minimum of one year. When the patient's file was obtained for this project, the HbA1c levels were ascertained.
- ✓ Attending certain hospitals' endocrinology clinics
- ✓ Willing to take part in the research

Exclusion Criteria:

- ✓ -Patients who did not follow through on the instruction;
- ✓ Patients who were involved in other initiatives.
- ✓ Additionally, critically sick patients were not included because, as stated by Slater 10, illness can affect blood glucose levels by affecting metabolism.

Sample Size Determination

The sample size was determined using a formula designed for comparing outcomes between two independent proportions, as described by Dhulkhed 9. The study aimed for a statistical power of 85%, targeting an expected effect of reducing the prevalence of suboptimal glycosylated haemoglobin (HbA1c) levels by 25%. Based on Adebisi and colleagues' research 11, it was found that 64% of patients with type 2 diabetes mellitus in Ilorin, Nigeria—a city located in the southwest—had HbA1c values greater than the normal threshold set at >7.2% for this study.

$$n = \frac{2(Z_{\infty}+Z_{\beta})^2 pq}{(p_1-p_2)^2}$$

Where:

n = required sample size

Z∞ = standard normal deviate corresponding to a level of significance of 95% = 1.96 [9].

Zβ = standard normal deviate corresponding to a power of 85% = 1.03 [9],

$$p = \frac{p_1+p_2}{2}$$

Where

P1= prevalence of HbA1c greater than 7.2. (= 64% in the control group; the present prevalence of suboptimal HbA1c) It was hypothesized that the intervention would reduce the proportion by 25%,

And, P2= reduction in the proportion of HbA1c greater than 7.2 = 64% – 25% = 39% (i.e. prevalence/proportion expected in the experimental group)

$$\text{Thus, } p = \frac{64+39}{2}$$

$$= 51.5\%$$

$$q = 100 - p = 48.5\%$$

Therefore,

$$n = \frac{2\,(1.96 + 1.03)^2\, 51.5*48.5}{(25)^2}$$

$$= \frac{44{,}660.27}{625}$$

$$= 71.5, \text{ i.e. } 72 \text{ per group.}$$

An allowance of 15% was made for drop out

15 % of 72 = 10.8

Final sample size = 72 + 10.8= 83 per group

Hence, at least 83 participants for control and 83 participants for experimental groups each were recruited to participate in the study.

Sampling Technique

A two-stage sampling technique was used in carrying out this study.

Stage one: Determination of Experimental (Intervention) and Comparison (Control) groups.

Rivers State has two tertiary health institutions. Participating tertiary health institutions were assigned to experimental and control groups by randomly assigning each to experimental and comparison (control) health institutions using simple randomization.

To achieve this, a coin tossing method was used. UPTH emerged as the intervention hospital while RSUTH served as the control hospital.

Stage two

In the second stage, a purposive sampling technique was used in recruiting participants for the study. The researcher met the diabetic persons at the diabetic clinics in the selected health institutions (Experimental and Control health institutions) on different occasions, after introducing the purpose of the study and the steps/procedures involved to them, those that opted for the study and who met the inclusion criteria were recruited. Their names and phone numbers or support persons' phone contacts were collected. The baseline recruitment lasted for about two months consecutively in both hospitals.

Data Collection Process

The data collection was done in three phases comprising the before-intervention/recruitment phase (P1), intervention Phase (P2) and after-intervention Phase (P3). Research Assistants:

Before-intervention/recruitment phase (P1)

Six research assistants (final year student nurses) trained by the researchers assisted in data collection from the selected health institutions. All the research assistants received training on the areas they were to assist in the study. Each item in the questionnaire was explained to them and the need to maintain objectivity was emphasized.

Pre- intervention data were collected from study participants (both experimental and control group) who met the inclusion criteria.

Dietary Intervention Phase

At the diabetes clinics where the intervention occurred, 4 registered dietitians were strategized to make personalized one-week meal plans for the patients. The meal plans were done based on the food preference of the patients. The patients were also told about the food alternatives in case they are unable to get the food on the timetable. Nutrition health talk was done using cooked and raw food items for food demonstration. Bi-monthly follow-up call was carried out to assess adherence to the meal plans. Adjustment was made if any issues or concerns arose regarding compliance.

Interventional Group Bundle

In this study, the interventional group received a personalized meal schedule using foods from the Diabetic exchange list (Exchange diet). Originally developed to help manage nutrition in diabetic patients who need to monitor their carbohydrate intake (CHO), these exchange lists aid in meal planning by focusing on estimating key macronutrients that affect post-meal blood sugar levels. The first significant revision of these lists was published in 1976, aiming for greater accuracy regarding caloric content, promoting fat modification and allowing individualized meal plans alongside the exchange system.

The patients' caloric intake was regulated, ranging from 1200 to 2500 kcal daily based on their nutritional requirements. Following BMI calculations, obese patients were limited to approximately 1000-1200 kcal per day. Overweight individuals received about 1200-1500 kcal each day, those with normal weight consumed around 1600-2000 kcal daily, and underweight patients were provided with roughly 2000-2500 kcal per day.

Bi-Monthly phone call follow-up

Phone calls were placed to the participants every 2 weeks. In instances where their numbers were not reachable, the participants were contacted through their caregiver / spouse's phone numbers or contacted through WhatsApp. The main aim of the phone calls was to find out how the participants were adhering to the meal plans and to find out if they had problems or complaints about the meal plans. Adjustments were made to the meal of some patients while some patients who were not complying were encouraged to stick to the meal plans.

Food demonstration using cooked and raw food items.

During the dietary education phase, the dietitians and research assistants used cooked and raw food items to demonstrate to the diabetic patients. Showing the cooked foods was to enable visualize the serving portion of food that will be adequate for them. Attached in the appendices are the pictures of the raw food items used during the health talk.

Control Group Bundle

The control group received the same treatment as the interventional group except for the food demonstration using cooked and raw food items.

RESULTS

Table 1 *(Sociodemographic of the participants.)*

Variable	Intervention n=81	Control n=81	X^2(P-value)
Age group			
20-29	3(3.7)	0(0.0)	13.649(0.009)
30-39	15(18.5)	31(38.3)	
40-49	31(38.3)	17(21.0)	
50-59	8(9.9)	12(14.8)	
≥60	24(29.6)	21(25.9)	
Marital Status			
Single	12(14.8)	0(0.0)	12.960(<0.001)
Married	69(85.2)	81(100.0)	

Table 1 shows the equal distribution of patients in the intervention and control groups with an average of 81 (50%) in each group. The study showed a significant difference in the age group between the two groups p=0.009, 31(38.3%) of the respondents in the experimental group were between 40-49 years compared to 31(38.3%) of the respondents in the control group who were 30-39 years. The marital status was significantly different between the two groups p<0.001, 69(85.2%) of the respondents in the experimental group were married compared to 81(100.0%) of the respondents in the control group who were married.

Table 2 *(Pre-intervention quality of life of the respondents-Physical health domain.)*

Variable	Experimental n=81	Control n=81	X^2(P-value)
The general perception of health			
Poor	43(53.1)	3(3.7)	9.017(0.011)
Fair	23(28.4)	28(34.6)	
Good	15(18.5)	50(61.7)	
Engage in moderate activities			
Yes, limited a lot	13(16.0)	25(30.9)	4.951(0.026)
Yes, limited a little	68(84.0)	56(69.1)	
Yes, limited a little	44(54.3)	67(82.7)	
No, not limited at all	19(23.5)	14(17.3)	
Walking more than a mile			
Yes, limited a lot	29(34.6)	29(35.8)	0.027(0.869
Yes, limited a little	53(65.4)	52(64.2)	
Walking several blocks			
Yes, limited a little	38(46.9)	70(86.4)	28.444(<0.001)
No, not limited at all	43(53.1)	11(13.6)	
Walking one block			
Yes, limited a lot	39(48.1)	0(0.0)	51.367(<0.001)
Yes, limited a little	11(13.6)	21(25.9)	
No, not limited at all	31(38.3)	60(74.1)	

Table 1 shows that the general perception of health was significantly different between both groups p=0.011, 43(53.1%) of the respondents in the experimental group reported that their general health was good compared to 50(61.7%) of the respondents in the control group. The perception of the respondents' health in comparison to one-year age was significantly different between both groups p<0.001, 55(67.9%) of the respondents in the experimental group reported that their health is much better compared to 0(0.0%) of the respondents in the experimental group.

The ability to engage in moderate activities was significantly different between both groups p=0.026, 68 (84.0%) of the respondents in the intervention were limited a little compared to 56 (69.1%) of the respondents in the control group.

The ability to walk one block varied significantly between both groups p<0.001, 31(38.3%) of the respondents in the experimental group and 60(74.1%) in the control group were not limited at all

Table 3 *(Pre-intervention quality of Life-Psychological, social and environmental domains.)*

Variable	Experimental n=81	Control n=81	X^2(P-value)
Cut down on the amount of time spent on work or other activities			
Yes	66(81.5)	53(65.4)	5.350(0.020)
No	15(18.5)	28(34.6)	
Limited in the kind of work or other activities			
Yes	33(40.7)	47(58.0)	4.840(0.028)
No	48(59.3)	34(42.0)	
Depressed or anxious			
Yes	36(44.4)	26(32.1)	2.613(0.106)
No	45(55.6)	55(67.9)	
Interfered with your normal social activities			
Not at all	17(21.0)	40(49.4)	25.295(<0.001)
Slightly	34(42.0)	35(43.2)	
Moderately	30(37.0)	6(7.4)	

Table 3 shows that 53(65.4%) of the respondents in the experimental group and 68(81.5%) in the control group cut down on the amount of time they spent on work or other activities, the result was significantly different at p=0.009. The result shows that 66(81.5%) of the respondents in the experimental group and 51(63.0%) of the respondents in the control group accomplished less than they would like to, p=0.009.

The study showed a significant difference in the limitation of the respondents on the kind of work or other activities p=0.028, 33(40.7%) of the respondents in the experimental groupwere limited compared to 47(58.0%) of the respondents in the control group. Although the difference was not statistically significant (0.106), the majority of patients in the experimental group were depressed 36(44.4) compared to those in the control group 26(32.1).

The result shows that 30(37.0%) of the respondents in the experimental group and 6(7.4%) in the control group condition interfered with their normal social activities p<0.001. The extent of pain interference was significantly different between both groups p<0.001, 28(34.6%) of the respondents in the experimental group and 15(18.5%) in the control group were not limited at all

Table 4 *(Pre-intervention quality of Life-Psychological domains.)*

Variable	Intervention n=81	Control n=81	X^2(P-value)
Been a nervous person			
All of the time	36(44.4)	81(100.0)	
A good bit of the time	12(14.8)	0(0.0)	62.308(<0.001)
Some of the time	24(29.6)	0(0.0)	
A Little of the time	9(11.1)	0(0.0)	
Felt so down in the dumps			
All of the time	2(2.5)	23(28.4)	125.307(<0.001)
Most of the time	0(0.0)	36(44.4)	
A good bit of the time	11(13.6)	22(27.2)	
Some of the time	12(14.8)	0(0.0)	
A Little of the time	15(18.5)	0(0.0)	
None of the time	41(50.6)	0(0.0)	
Felt calm and peaceful			
All of the time	26(32.1)	0(0.0)	82.375(<0.001)
Most of the time	38(46.9)	19(23.5)	
A good bit of the time	11(13.6)	3(3.7)	
Some of the time	0(0.0)	15(18.5)	
A Little of the time	2(2.5)	32(39.5)	
None of the time	4(4.9)	12(14.8)	

Table 4 shows that 36(44.4%) of the respondents in the experimental group and 81(100.0%) of the respondents in the control group had been nervous person all the time p<0.001, 11(13.6%) of the respondents in the experimental group and 22(27.2%) of the respondents in the control group
Also, 38(46.9%) of the respondents in the experimental group and 19(23.5%) in the control group feel calm and peaceful most of the time p<0.001. Furthermore, 28(34.6%) of the respondents in the experimental group felt downhearted and blue none of the time compared to 45(55.6%) who felt like that most of the time, the result was significantly different at P<0.001.

Table 5 *(Aggregate score of the pre-intervention group.)*

Variable	Experimental group n=81	Control n=81	X^2(P-value)
Poor	6(7.41)	11(13.58)	4.6066(<0.099)
Fair	45(55.56)	32(39.5)	
Good	30(37.03)	38(46.92)	

Table 5 shows that at the beginning of the study, the majority of the participants in the control group had a good quality of life 38(46.92) compared to those in the experimental group 30(37.03), the difference between the two groups was however not statistically significant with p=0.099,

Table 6 *(Post-Intervention Quality of Life.)*

Variable	Intervention n=81	Control n=81	X^2(P-value)
The general perception of health			
Poor	15(18.5)	28(34.6)	9.017(0.011)
Fair	23(28.4)	50(61.7)	
Good	43(53.1)	3(3.7)	
Engage in moderate activities			
Yes, limited a lot	14(17.3)	11(13.6)	0.426(0.514)
Yes, limited a little	67(82.7)	70(86.4)	
Engage in moderate activities			
Yes, limited a lot	13(16.0)	25(30.9)	4.951(0.026)
Yes, limited a little	68(84.0)	56(69.1)	
Lift or carry groceries			
No, not limited a lot	81(100)	81(100)	

Walking several blocks			
Yes, limited a lot	20(24.7)	22(27.2)	0.129(0.720)
Yes, limited a little	61(75.3)	59(72.8)	
Walking one block			
Yes, limited a lot	25(30.9)	73(90.1)	59.510(<0.001)
Yes, limited a little	56(69.1)	8(9.9)	

Table 6 shows that 6 months after the intervention, the general perception of health was significantly different between both groups p=0.011, 43(53.1%) of the respondents in the experimental group reported that their general health was good compared to 3(3.7%) of the respondents in the control group.

The ability to engage in moderate activities was significantly different between both groups p=0.026, 68 (84.0%) of the respondents in the intervention were limited a little compared to 56(69.1%) of the respondents in the control group.

The ability to climb one flight of stairs varied significantly between both groups p<0.001, 56(69.1%) of the respondents in the experimental group were limited a little compared to 8 (9.9%) of the respondents in the control group. The ability to walk one block varied significantly between both groups p<0.001, 31(38.3%) of the respondents in the experimental group and 60(74.1%) in the control group were not limited at all.

Table 7 *(Post-intervention quality of life-psychological, social, and environmental domains.)*

Variable	Experimental n=81	Control n=81	X^2(P-value)
Cut down on the amount of time spent on work or other activities			
Yes	68(81.5)	53(65.4)	5.350(0.021)
No	15(18.5)	28(34.6)	
Limited in the kind of work or other activities			
Yes	20(24.70)	47(58.0)	4.840(0.028)
No	61(56.30)	34(42.0)	
Depressed or anxious			
Yes	26(32.1)	36(44.4)	2.613(0.106)
No	55(67.9)	45(55.6)	
Interfered with your normal social activities			

Not at all	40(49.4)	17(21.0)	25.295(<0.001)
Slightly	35(43.2)	34(42.0)	
Moderately	6(7.4)	30(37.0)	

Table 7 shows that 6 months after the intervention, fewer respondents in the experimental group admitted to being depressed or anxious 26 (32.1 %) compared to respondents in the control group 36(44.4%). The study showed a significant difference in the limitation of the respondents on the kind of work or other activities p=0.028, 20(24.7%) of the respondents in the experimental group were limited compared to 47(58.0%) of the respondents in the control group.
The result shows that 40(49.4%) of the respondents in the experimental group and 17(21%) in the control group had normal social activities p<0.001. The extent of pain interference was significantly different between both groups p<0.001, 28(34.6%) of the respondents in the experimental group and 15(18.5%) in the control group were not limited at all

Table 8 *(Post-Intervention Quality of Life-Psychological domains.)*

Variable	**Experimental n=81**	**Control n=81**	**X^2(P-value)**
Been a nervous person			
All of the time	36(44.4)	81(100.0)	
A good bit of the time	12(14.8)	0(0.0)	62.308(<0.001)
Some of the time	24(29.6)	0(0.0)	
A Little of the time	9(11.1)	0(0.0)	
Felt so down in the dumps			
All of the time	2(2.5)	23(28.4)	125.307(<0.001)
Most of the time	0(0.0)	36(44.4)	
A good bit of the time	11(13.6)	22(27.2)	
Some of the time	12(14.8)	0(0.0)	
A Little of the time	15(18.5)	0(0.0)	
None of the time	41(50.6)	0(0.0)	
Felt calm and peaceful			
All of the time	26(32.1)	0(0.0)	82.375(<0.001)
Most of the time	38(46.9)	19(23.5)	
A good bit of the time	11(13.6)	3(3.7)	

Some of the time	0(0.0)	15(18.5)
A Little of the time	2(2.5)	32(39.5)
None of the time	4(4.9)	12(14.8)
Some of the time	0(0.0)	6(7.4)
A Little of the time	0(0.0)	39(48.1)
None of the time	2(2.5)	30(37.0)

Table 8 shows that after 6 months, 34(42.0%) of the respondents in the experimental group and 0(0.0%) of the respondents in the control group are full of PEP sometimes p<0.001, 36(44.4%) of the respondents in the experimental group and 81(100.0%) of the respondents in the control group had been a nervous person all the time p<0.001, 11(13.6%) of the respondents in the experimental group and 22(27.2%) of the respondents in the control group feel so down in the dumps a good bit of the time p<0.001.
Also, 38(46.9%) of the respondents in the experimental group and 19(23.5%) in the control group feel calm and peaceful most of the time p<0.001, 17(21.0%) of the respondents in the experimental group and 6(7.4%) in the control group have a lot of energy all the time p<0.001.
Furthermore, 28(34.6%) of the respondents in the experimental group felt downhearted and blue none of the time compared to 45(55.6%) who felt like that most of the time, the result was significantly different at P<0.001.

Table 9 *(Post Intervention Quality of Life.)*

Variable	Experimental n=81	Control n=81	X^2(P-value)
Poor	4(4.94)	24(29.6)	19.533(<0.001)
Fair	33(40.74)	32(39.5)	
Good	44(54.32)	25(30.9)	

Table 9 result shows that after the intervention period, there was a significant difference in the quality life between both groups p<0.001, 25(30.9) of the respondents in the control group had good quality of life compared to 44(54.3) of the respondents in the experimental group

Discussion

Quality of life of DM patients

Result from the sociodemographic data show that there is a significant difference in the age group between the two groups p=0.009, 31(38.3%) of the respondents in the experimental group were between 40-49 years compared to 31(38.3%) of the respondents in the control group who were 30-39 years. The pre-intervention quality of life of DM patients, who participated in this study, was moderate with 54.3% and 39.5% in the control group. Previous authors had reported a low quality of life among diabetes patients in Nigeria12. These previous studies made use of the generic QoL instrument – WHO

QOL Bref, whereas the diabetes-specific QoL (well-being) scale was used in this study. Another author reported a 'fairly good' quality of life 13, among a hundred diabetes patients selected from Lagos State University Teaching Hospital, and Oyo State Specialist Hospital, Ring –road, Ibadan. Quality of life (QoL) for diabetic patients in the experimental group significantly improved six months after the intervention compared to the baseline result; however, no significant improvement was observed after the intervention, except for the energy domain. This result partially agrees with that of 14, who after three months of a one-group family-based intervention program observed a significant improvement in the QoL of DM patients. The results are also in line with those of 15, who found that patients with diabetes mellitus experienced an improvement in their quality of life after participating in a dietary educational program.

While some improvement was observed in the control group, especially in the six months following the intervention, there was generally a more noticeable improvement in the after-intervention scores of the patients in the interventional group compared to the control group. As was previously mentioned, this could be related to the attention that the patients received from other activities that were either directly or indirectly in the hospital that was part of the control group.

Diverse studies have reported on how diabetes education affects patients' quality of life. In a systematic review of Randomized Controlled Trials (RCTs), Pamungkas 15 found that DM patients' psychological well-being and quality of life improved after participating in dietary educational programs. Wichit 17 found no discernible difference between the QoL of patients in the experimental and control groups in an RCT on such a program.

CONCLUSION

In conclusion, findings from this study shows that the use of cooked and raw food during dietary education as a means of intervention helped to improve the quality of life of diabetic patients after a period of 6 months. This was so because using cooked and raw food during food demonstration gave the participants better understanding during health talks. Hence, nutrition educators should incorporate its use during nutrition education and food counselling. Additionally, there are no many studies of this type in Nigeria, and none of such in Rivers State that the researcher is aware of .More dietary education studies that makes use of cooked and raw food demonstration should be carried out to determine its effect in the management of diabetes mellitus.

Acknowledgment

My special thanks go to my project supervisor, Prof. Ordinioha Best, for helping with the design of this research work. I specially thank Prof. Chinenye Sunny for helping me out with the process of data collection. To the staff of School of Public Health Uniport, I am very grateful.

REFERENCES

1. Sami W, Ansari T, Butt NS, Hamid MRA. Effect of diet on type 2 diabetes mellitus: A review. Int J Health Sci (Qassim). 2017 Apr-Jun;11(2):65-71. PMID: 28539866; PMCID: PMC5426415.
2. Wake A. Antidiabetic Effects of Physical Activity: How It Helps to Control Type 2 Diabetes. Diabetes, Metabolic Syndrome and Obesity, 2020. 13. 2909-2923. 10.2147/DMSO.S262289.

3. Wattana C, Srisuphan W, Pothiban L, Upchurch SL. Effects of a diabetes self-management program on glycemic control, coronary heart disease risk, and quality of life among Thai patients with type 2 diabetes. Nurs Health Sci. 2007 Jun;9(2):135-41. doi: 10.1111/j.1442-2018.2007.00315. x. PMID: 17470188.
4. D'Souza M. S, Ruppert SD, Parahoo, K, Karkada S N, Amirtharaj A, Jacob D, Balachandran S, SalmiI . Foot care behaviors among adults with type 2 diabetes.2016 Primary Care Diabetes, 10(6), 442–451. https://doi.org/10.1016/j.pcd.2016.04.002
5. Rani MS, Pippalla RS, Mohan GK, Gaikwad SB, Prasad B. A Comparative Quality of Life Assessment of Herbal Drugs with Allopathic Drugs for the Treatment of Diabetic Complications. Pharmaceutical Crops 2015. 5: 77-84.
6. Young EE, Unachukwu C N. Psychosocial aspects of diabetes mellitus.African journal of diabetes medicine. 2012. 20.1
7. Lindsay G, Inverarity K, McDowell JR. Quality of life in people with type 2 diabetes in relation to deprivation, gender, and age in a new community-based model of care. 2012 Nursing Research and Practice
8. Kumar R, Rehman S, Baloch GM. Effectiveness of health education intervention on diabetes mellitus among the teachers working in public sector schools of Pakistan. BMC Endocr Disord 22, 194. 2022. https://doi.org/10.1186/s12902-022-01110-7
9. Dhulkh VK, Dhorigol, MG, Mane R., Gogate V, Dhulkhed P. Basic Statistical Concepts for Sample Size. Estimation Indian Journal of Anaesthesia.2008 52.6:788-793
10. Slater P, McCance T, McCormack B. The development and testing of the Person-centred Practice Inventory - Staff (PCPI-S). Int J Qual Health Care. 2017 Aug 1;29(4):541-547. doi: 10.1093/intqhc/mzx066. PMID: 28586441.
11. Adebisi, S.A, Oghagbon, E.K, Akande, T.M & Olarinoye, J.K. (2009). Glycated haemoglobin and glycaemic control of Diabetics in Ilorin. Nigerian Journal of Clinical Practice March, Vol. 12.1:87-91.
12. Issa B.A and Baiyewu O. 2006.Quality of life of diabetes mellitus patients in a Nigerian Teaching Hospital. Hong Kong Journal of Psychiatry 16: 27-33.
13. Oguntibeju, Oluwafemi & Odunaiya, N & Oladipo, B & Truter, Ernest. (2012). Health behaviour and quality of life of patients with type 2 diabetes attending selected Hospitals in South Western Nigeria. The West Indian medical journal. 61. 619-26.
14. Hu J, Wallace DC, McCoy TP, Amirehsani KA. A family-based diabetes intervention for Hispanic adults and their family members. Diabetes Educ. 2014 Jan-Feb;40(1):48-59. doi: 10.1177/0145721713512682. Epub 2013 Nov 18. PMID: 24248832; PMCID: PMC4083837.
15. Pamungkas RA, Chamroonsawasdi K, Vatanasomboon P. A Systematic Review: Family Support Integrated with Diabetes Self-Management among Uncontrolled Type II Diabetes Mellitus Patients. Behav Sci (Basel). 2017 Sep 15;7(3):62. doi: 10.3390/bs7030062. PMID: 28914815; PMCID: PMC5618070.
16. Wichit N, Mnatzaganian G, Courtney M, Schulz P, Johnson M. Randomized controlled trial of a family-oriented self-management program to improve self-efficacy, glycemic control and quality of life among Thai individuals with Type 2 diabetes. Diabetes Res Clin Pract. 2017 Jan; 123:37-48. doi: 10.1016/j.diabres.2016.11.013. Epub 2016 Nov 19. PMID: 27918976.