Gratis

Research Article

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The Impact of Family Support on Medication Adherence and Glycemic Control of Type 2 Diabetes Outpatients in a Nigerian Tertiary Hospital

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Abstract

Background: Diabetes management rarely target family support as a means of promoting diabetes self-care behaviour among adults. The potential influence of family member on individuals with Type 2 diabetes has not been fully explored. The study aims to examine the impact of family support on medication adherence and glycemic control of their Type 2 diabetes out-patients in a tertiary hospital.

Methods: The study was a prospective cross-sectional survey conducted on Type 2 diabetes out-patients attending endocrinology clinic at the University of Nigeria Teaching Hospital (UNTH) between October 2013 and April 2014. The Diabetes Family Behavioral Checklist (DFBC-13) was used to assess family support while the MMAS-8 (Morisky medication Adherence Scale) was used to assess medication adherence. Fasting blood glucose readings were obtained from patients' case files. Data were analyzed using SPSS (Statistical package for social sciences) version 16 and level of statistical significance set at $p<0.05$.

Result: A total number of 250 patients were assessed. The mean score for family support was 42 of 65 (range 13 to 65). Family support score (diet, glucose, exercise, diabetic self-care) associated with educational status (socio-demographic characteristics) $r = 0.171^{**}$ $p = 0.007$. Family support was inversely correlated to adherence and glycemic control $(-0.161^{**}, P = 0.011, r = -0.098, p = 0.147)$ respectively. Medication adherence was low as only 1.6% of the respondents adhered to their medication.

Conclusion: Family support had little influence on medication adherence and glycemic control.

Keywords: Impact, Family support, Medication adherence, Glycemic control, Type 2 diabetes, Outpatients

Introduction

Diabetes mellitus is a growing worldwide epidemic concern with an estimated number of 300 million by the year 2030 [1].In Africa, it is estimated that the prevalence of diabetes is 1% in rural areas, up to 7% in urban sub-Sahara Africa, and between 8-13% in more developed areas such as South Africa [2]. In Nigeria, the prevalence varies from 0.65% in rural Mangu (North) to 11% in urban Lagos (South) [3]. The perturbing trends of diabetes mellitus in socioeconomically and technologically developing nations have been attributed to dramatic changes in nutritional, lifestyle, and epidemiological transitions. For adults with type 2 diabetes, the performance of diabetes self-care activities is associated with improved glycemic control and prevents diabetes-related complications, hospitalizations, and mortality. Most theories of health

behaviour change required for diabetes self-care performance include a social support component and family members are considered a significant source of social support for adults with diabetes [4].Studies have demonstrated that strong family and social support appear to have a positive impact on Glycemic control and or self- management behaviour [5] [6]. However, some studies have recognized that no relationship exists between family support and self-management behaviour [7]. The potential influence of family members on individuals with Type 2 diabetes has not been explored [7]. The aim of the study is to assess the impact of family support on medication adherence and glycemic control of type 2 diabetes out-patient attending endocrinology clinic in a tertiary hospital.

Methodology

This was a prospective cross-sectional survey conducted among Type 2 diabetes out-patients attending endocrinology clinic at the University of Nigeria Teaching Hospital (UNTH) between October 2013 and April 2014. Ethical approval was sought and granted by the hospital's Ethics and Research Committee and oral informed consent was obtained from participants. Patients who were diagnosed with type 2 diabetes, ≥ 18 years of age, taking oral hypoglycemic medication were included in the study while patients with co-morbid condition, diabetic pregnancy women and taking insulin to control blood glucose were excluded from the study. Diabetes Family Behaviour Checklist (DFBC-13) was used to measure family support, Morisky Medication Adherence Scale (MMAS-8) was used to measure medication adherence and fasting blood glucose reading were obtained from patients' medical record.

Diabetes family behaviour checklist

The diabetes family behaviour checklist is a 16-item tool validated by Schafer and colleague [8] that measures family interaction related specifically to diabetes. It measures supportive and non-supportive family behaviour. A positive summary score ranges from 9 to 45 while the negative summary score ranges from 7 to 35.

For the purpose of this study three (3) items on insulin were excluded from the questionnaire because the scope of this study covered type 2 diabetes outpatients and most of them were taking hypoglycemic agent.

The DFBC is divided into four (4) domains: diet; glucose; exercise; and diabetic self-care as general. The DFBC is composed of seven (7) positive questions and six (6) negative questions with scores ranging from 13 to 65. The response format is in a 5- point scale from 1 (never) to 5 (at least once a day).

Morisky medication adherence scale (MMAS-8)

The Morisky Medication Adherence Scale (MMAS-8) measures adherence in those on medication(s). This 8-item MMAS-8 [9] measures both intentional and non-intentional non-adherence.

Each item on the MMAS-8 is measuring a specific medication-taking behaviour and not a determinant of adherence behaviour. Response categories were yes/no for each item with a dichotomous response items 1 to 7 and a 5 point Likert response for the item 8 [9].

Glycemic control

Glycemic control (fasting blood glucose, FBS, readings) was obtained from the folders of patients who participated in the study. The first six (6) FBG readings were used as initial mean FBG while the last six FBG readings were used as final mean FBG. The percentage change was calculated using: (Final mean FBG- initial mean FBG/Final mean FBG X 100)

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) statistical software (version 16.0; SPSS, Inc., Chicago, IL). The negatively awarded items in the DFBC were reversed. Descriptive statistics were presented as frequency, percentage and mean ± standard deviation. Pearson's product- moment correlation coefficient analysis was used to identify association between family support score and adherence score, and FBG percentage change. Paired sample t-test was used to find the differences between initial mean FBG and final mean FBG. Statistical significance was set at $p \leq 0.05$.

Results

Out of 260 questionnaires administered, 250 questionnaires were retrieved and completed fully giving a response rate of 96.2%. Majority of the respondents (66.8%) were greater than 56 years of age. Female participants were 176 (70.4%). A hundred (40.0%) of the respondents had primary education. Most of the respondents (95.6%) were married (Table1). Table 2 reveals the mean score for family support (DFBC) was 42.34 ± 4.79. The association of family support score with

adherences score and blood glucose percentage change was inversely associated [-0.161**, -0.098 respectively-(Table 3)]. The adherence status of the respondents revealed that only 1.6% of the respondent adhered to their medication (Figure 1).
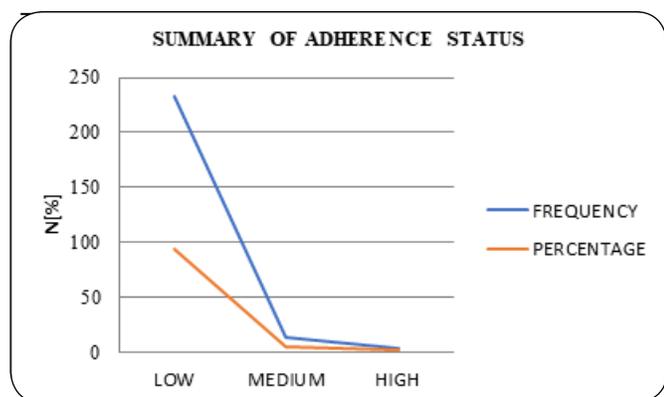

Figure 1: Summary of adherence status.

Table 1: Demographic characteristic of respondents (N-250).

Variable	Frequency	Percentage (%)
Age (years)		
18-25	2	0.8
36-45	15	6
46-55	66	26.4
≥ 56	167	66.8
Gender		
Male	74	29.6
Female	176	70.4
Level of Education		
No formal education	37	14.8
Primary education	100	40
Secondary education	53	21.2
Tertiary education	60	24
Marital status		
Married	239	95.6
Separated	1	0.4
Divorced	6	2.4
Single	4	1.6
Occupation		
Student	6	2.4
Self employed	126	50.4
Civil service	49	19.6
Retired	42	16.8
Home maker	27	10.8

Discussion

The study assessed the impact of family support on medication adherence and glycemic control of type 2 diabetes mellitus out-patients in a Nigerian tertiary hospital. Family support had no influence on medication adherence and glycemic control. Patients' adherence to diabetic medications was poor. A similar research in Bangladesh showed a different result. The study recorded positive impact towards diabetes management, adherence and support from friends and family [10]. The association between family support, adherence score and FBG percentage change was inversely correlated in our study. This suggests that patient who received support from family members were less adherent to medication and had poor glycemic control. A study carried out by Khosravizade [11] reported that family support had negative influence on diabetes management, another study in Sweden reported that higher level of non-supportive family behaviour was related to reduced regimen adherence and poor glycemic control in adult with type 1 diabetes [12]. Mayberry et al [4], also gave similar reports that family members' non-supportive behaviour was associated with less adherent to medication regimen, which in turn was associated with poor glycemic control.

The association between family support score and demographic characteristic, only level of education was statistically significant (r= 0.171** p= 0.007), family support score was negatively correlated with gender and marital status (r = -0.061, p =0.341 and r = -0.045, p = 0.477 respectively). The correlation of family support score and level of education shows that, those patients with tertiary education were receiving more family support from family members than those with other level of education (no formal education, primary and secondary education). Level of education might play a role in family support of patients with type 2 diabetes mellitus.

The association of adherence score and demographic characteristic, only marital status was correlated with adherence score and statistically significant (r = 0.170**, p = 0.007). This is in line with a similar study carried out in South West part of Nigeria. [13], reported that only marital status of patients was statistically significant and associated with adherence.

According to a study carried out in southern India [14], they reported that about 50% of the patients were highly adherent to medication. The low adherences to medication in our study might probably be due to factors

related to adherences such as forgetfulness. Adherence has been found to decline over time when patients are treated for chronic condition [15]. According to Osterberg et al., [16], patients' medication non- adherences include forgetfulness, other priorities, decision to omit doses, lack of information and emotional factors.

Table 2: Means score of family support of respondents.

Variable	Mean ± SD
Praise you for following your diet?	2.54 ± 1.24
Nag you about following your diet?	4.02 ± 1.33
Eat at the same time that you do?	3.57± 1.51
Eat foods that are not part of your diabetes diet?	2.46 ±1.34
Diet domain	12.59 ± 2.42
Nag you about testing your glucose level?	4.24 ± 1.04
Help you decide if changes should be made based on glucose testing result?	3.06 ± 1.28
Criticize you for not recording the results of glucose test?	4.62 ± 0.84
Glucose domain	11.93 ±1.79
Criticize you for not exercise regularly?	4.50 ± 0.96
Encourage you to participate in sport activities?	2.00 ±1.36
Exercise with you?	1.70 ±1.10
Exercise domain	8.21 ±1.99
Argue with you about your diabetes self-care activities?	4.28 ±1.10
Planning family activities so that they fit in with your diabetes self-care schedule?	3.03 ±1.32
Congratulate you for sticking to your diabetes self-care schedule?	2.30 ±1.46
General domain	9.61 ±2.25
Family support score	42.34±4.79
Initial mean fasting blood glucose	175.87 ±64.04
Final mean fasting blood glucose	169.60±62.92

Table 3: Association of family support score, demographic characteristics, adherence score and fasting blood glucose % change.

Variable	Family Support Score	Age	Sex	Level of Edu.	Marital Status	Occupation	Adherence Score	FBG % change
Family support score	1							
Age	0.02	1						
Sex	-0.061	-0.208**	1					
Level of Edu.	0.171**	-0.318**	0.069	1				
Marital status	-0.045	-0.290**	0.191**	-0.027	1			
Occupation	0.122	0.243**	-0.01	0.083	-0.163**	1		
Adherence Score	-0.161*	-0.116	0.039	-0.007	0.170**	-0.12	1	
FBS % change	-0.098	-0.029	0.04	-0.07	-0.053	-0.039	0.08	1

Adherence to medication in this present study was generally low. Studies have revealed low levels of adherence to treatment recommendation across health states, treatment and ages [17]. In the MMAS-8, 64.4% of the respondents agreed that they sometimes forget to take their anti- diabetic medicines. The relationship between FBG percentage and demographic characteristics showed no statistical significance. There was no significant difference between the final mean fasting blood glucose (the last six reading) S.D = 62.92 and the initial mean fasting blood glucose (the first six reading) S.D = 64.04. The most likely explanation is poor adherence to medication, which was also reported in a study in Mexico [18] which opined that non-adherence to medication declines the efficacy of the medication and in turn, the glycemic control.

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Declarations

The authors declare that the study received no funding and that there are no conflicts of interest to declare.

Conclusion

Family support has no influence on medication adherence and glycemic control. T2DM patients had low adherence to their medications.

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