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The Relationship Between Perceived Social Support and Medication Adherence Among Adult Type 2 Diabetes Mellitus Patients Attending the Diabetes Clinic in a Tertiary Health Institution in South- South Nigeria

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Abstract

Purpose: Medication adherence can be defined as the extent to which a patient's behaviour corresponds to the medication dosing regimen including time, dosing, and interval of medication intake. In chronic conditions with long-term therapies like hypertension, diabetes, depression, etc., adherence is important in achieving target outcomes but is often low. It has long been recognized that support from family, friends and significant others do play a role in helping diabetics adhere to their medication which might lead to optimal glycaemic control. This study set out to find out what influence perceived social support has, as regards medication adherence among adult type 2 diabetic Nigerians assessing care in Federal Medical Centre, Asaba, Nigeria.

Methodology: The study was conducted on 244 participants who attended the diabetic clinic of the Federal Medical Centre, Asaba from September to November 2018. Data was collected by means of an interviewer-administered questionnaire comprising of 3 sections. Section A was for sociodemographic characteristics, section B was the 8-item Morisky Medication Adherence Scale for information on medication adherence and section C was the modified Multidimensional Scale of Perceived Social Support to collect information on perceived social support.

Findings: All the recruited 244 participants completed the study giving a response rate of 100%. The age range of the respondents was 18 to 87 years with a mean age of 51.9 ± 6.1 years. Females accounted for a higher percentage of respondents [60.2%] compared to their male counterparts [39.8%]. Good total perceived social support was significantly associated with high medication adherence [p=0.0001]. A good total perceived social support (OR = 3.27; 95% CI = 2.25 - 4.71; P = 0.0001) has 3.27 times the odds for high medication adherence than a poor total perceived social support.

Unique Contribution to Theory, Policy and Practice: The study shows that high medication adherence is significantly associated with good perceived social support. It is important that healthcare providers caring for patients with type 2 diabetes involve families, friends, or significant others in their management so as to improve their medication adherence. Routine evaluation of perceived social support is also recommended for type 2 diabetes patients with poor medication adherence.

Key words: *Perceived social support, Medication adherence, Type 2 Diabetes mellitus*.

INTRODUCTION

In spite of the advancements of medical sciences in the management of diabetes mellitus over the years, management of diabetes mellitus remains a very big burden to people living with the disease, their families, the health care system and the society in general. A wide variety of pharmacological classes of drugs are now available for the treatment of type 2 diabetes mellitus but the adherence to oral hypoglycemic agents for patients with diabetes still remains sub-optimal.[1]

Medication adherence can be defined as the extent to which a patient's behavior corresponds with the prescribed medication dosing regimen including timing, dosing and interval of medication intake.[2,3] Adherence is a multifactorial phenomenon that can be influenced by various factors. These factors can be divided into five different dimensions: social and economic-related factors, therapy-related factors, disease-related factors, patient- related factors and health care system-related factors.[2,3] Some factors can have an influence on intentional non- adherence (conscious decision not to take the medication e.g. because of high cost) while others can have an influence on non-intentional non-adherence (e.g. forgetfulness because of mental comorbidity).[2,3] In chronic conditions with long-term therapies, adherence is important to achieve target outcomes but is often low.[4]

Social support is a network for family, friends, neighbors and community members that are available in times of need to give physical, psychological and financial help. Perceived social support can be defined as a perception that one is accepted, cared for and provided with assistance from certain individuals. Support can come from many sources such as family, friends, and significant others.[5] Positive social support from family has been linked with improved patient behavior, adherence to medications and lifestyle recommendations.[6]

The study set out to assess how perceived social support influences medication adherence among adult type2 diabetes mellitus Nigerians accessing care in the Diabetic Clinic of Federal Medical Centre, Asaba, with the hope that the findings would motivate clinicians to enquire about social support in routine outpatient consultation encounter with adult type2 diabetes mellitus patients.

MATERIALS AND METHODS

Setting: The study was carried out in the diabetic outpatient clinic of Federal Medical Centre, Asaba which is run by Consultant Endocrinologist with a team of Resident Doctors once weekly, every Thursday from 9:00 am to 4:00 pm.

Study population: This comprised of all adult type 2 diabetes mellitus patients that have been diagnosed and on treatment for a minimum of six months. The study was carried out over a period of three months [September to– November, 2018].

Data obtained from the Department of Health Information Management records of the hospital showed that the clinic attends to an average of 65 patients in a week comprising of about 5 new

patients and 60 old patients. In one month, that is 60 patients x 4 = 240 patients, while in 3 months, it will be 240 patients x 3 = 720 patients.

The sample size was determined using the Leslie Kish formulation for population > 10,000.[7] n = ~~z~~^{2} pq where

d^2

~~Z~~ = the standard normal deviation usually set at 1.96 which corresponds to 95% confidence interval.

P = the proportion of the target population estimated to have a particular characteristic. In a study done in Ibadan by Adisa et al, the percentage of medication adherence among adult type 2 diabetes mellitus patients was 60 percent.[8] Hence P=0.60

q = 1.0 – p = (1.0-0.60) = 0.40

d = the degree of accuracy desired usually set at p 0.05

From the calculation n = 368.79

When studying population < 10,000, the formula

$$nf = \frac{n}{1 + \frac{n}{N}} = \frac{369}{1 + \frac{369}{720}} = \frac{369}{1 + 0.512} = 244$$

Where nf is the desired sample size.

Hence the sample size in this study was 244.

Inclusion Criteria: Registered diabetes mellitus patients from the ages of 18 years and above who gave informed consent and had been on treatment with oral antidiabetic medications for at least six months and who lived with families, friends or relatives so that information on social support can be obtained.

Exclusion criteria: Critically ill patients as these patients require urgent medical attention. Also, patients with major psychiatric problems because they may not be able to answer questions and pregnant women because the study was not on gestational diabetes mellitus.

Tools for data collection:

Data was collected using the data collection form which was sub divided in different sections.

Section A: This was a pre-tested interviewer administrated questionnaire containing information on socio-demographic characteristics of the participants. The information that was collected included age, gender, marital status, ethnic group, religion, educational status and occupation.

Section B: This was the 8 - item Morisky Medication Adherence Scale [MMAS-8][9] which was used to collect information on medication adherence. The MMAS-8 has a score range of 0-8. In this study scores were categorized into 3 levels of adherence. Score of 8 was categorized as high adherence; scores of 6-7 as medium adherence, and scores of 0-5 as low adherence. The sensitivity and specificity of 8-item MMAS are 93% and 53% respectively. The validity value via Cronbach's alpha is 0.88. MMAS-8 has the advantages of being brief, inexpensive, and applicable in various settings.[10]

Section C: This was the modified Multidimensional Scale of Perceived Social Support [MSPSS] devised in 1988 by Zimet et al.[11] This was used to collect information on perceived social support. MSPSS is a 12-item questionnaire that objectively measures perceived social support using 3 subscales namely Family subscale; Friends subscale and Significant others subscale. The total modified MSPSS contains 12 questions scored 1-5. The minimum score is 12, while the maximum is 60 and the average is 36. For the purpose of this study, total score below 36 was regarded as poor perceived social support, while scores of 36 and above were regarded as good perceived social support. The MSPSS provides 4 scores: family (FA), friends (FR), significant others (SO) and the total. The higher the score the more the perceived social support level. The MSPSS has been used in various studies in Nigeria.[12]

Study Protocol: Adult patients seen during the study period were selected through a process of systematic random sampling which involved picking the first patient from an initial ballot and then every third patient from the first (sampling fraction 244/720 = 1:3) that registered to see the physician and who met the selection criteria.

Data analysis: Data was analyzed using the Statistical Package of Social Sciences [SPSS] version 20. The data was summarized as percentages and frequency tables depicting the pattern of medication adherence, while Spearman's ranked correlation and ANOVA were used to determine the relationship between perceived social support and medication adherence. A p-value of ≤ 0.05 was considered statistically significant.

Ethical consideration: Ethical approval for the study was obtained from the Ethical Committee of Federal Medical Centre, Asaba. Each participant signed a written voluntary informed consent after the rationale and procedure of the study were explained to them.

RESULTS

Socio-demographic characteristics:

All the recruited 244 participants completed the study giving a response rate of 100 $^0/_0$. The age range of the respondents was 18 to 87 years with a mean age of 51.9+ 6.1 years. As seen in (Table 1) below, majority of the respondents [45.5%] were above 54years of age, while the 18-30 age group constituted the least number of respondents (11.5$^0/_0$). The female gender accounted for a higher percentage of respondents (60.2$^0/_0$) compared to their male counterparts (39.8$^0/_0$).

One hundred and fifty-three respondents (62.7%) were married while only six (2.5%) representing the least number were co-habiting. The respondents that had primary and secondary education were highest in number (31.6%) as opposed to those with no formal education (15.5%). The majority of the respondents (79.9%) practiced Christianity while 11.1% of the respondents practiced Islam. Those practicing other religions constituted the least (9.0%)

Sixty-one respondents (25.0%) were civil servants, while 143 respondents (58.6%) were self-employed. The Igbo ethnic group accounted for 40.2% of the respondents while the Itsekiri ethnic group being the lowest number accounted for only 7.8%.

Table 1: Socio-demographic characteristics of Respondents

Percentage distribution of Respondents by socio-demographic characteristics

Socio-demographic characteristic	Frequency [%]
Age(years)	
18 - 30	28[11.5]
31 - 42	34[13.9]
43-54	71[29.1]
>54	111[45.5]
Gender	
Male	97[39.8]
Female	147[60.2]
Marital status	
Single	42[17.2]
Married	153[62.7]
Separated	13 [5.3]
Widowed	14[5.7]
Divorced	16[6.6]
Cohabiting	6[2.5]
Educational status	
Nil formal	38[15.5]
Primary	77[31.6]
Secondary	77[31.6]
Tertiary	52[21.3]
Religion	
Christianity	195[79.9]
Islam	27[11.1]
Others	22[9.0]
Occupation	
Civil Service	61 [25.0]
Self-employed	

(Business & Artisans)	143[58.6]
Unemployed	40[16.4]
Ethnicity	
Ijaw	77[31.6]
Igbo	98[40.2]
Itsekiri	19[7.8]
Urhobo	50 [20.4]

Distribution of medication adherence in the respondents:

(Table2) below shows the distribution of medication adherence in the respondents. One hundred and seventy-nine respondents (73.4%) had a high adherence score. Eleven respondents (4.5%) had a medium adherence score while 54 (22.1%) respondents had a low adherence score.

Table 2: Medication adherence in the respondents by the Morisky Medication Adherence Scale (MMAS-8)

Total score (MMA8)	Adherence	N (%)
0-5	Low	54(22.1)
6-7	Medium	11(4.5)
8	High	179(73.4)

The Perceived Social Support of the respondents:

(Table 3) below shows the perceived social support of the respondents. One hundred and forty-two respondents (58.2%) had good family social support while 102 respondents (41.8%) had poor family social support. Eighty-nine respondents (36.5%) had good friends' social support while 155 respondents (63.5%) had poor friends' social support. One hundred and fifty-three respondents (62.7%) had good significant others support while 91 respondents (37.3%) had poor significant others support. Total perceived social support: 155 respondents (63.5%) had good total perceived social support while 89 respondents (36.5%) had a poor total perceived social support. There was a statistically significant difference in the mean scores of all the components of the perceived social support of the respondents.

Table 3: Perceived social support of the respondents

Perceived Social Support	N (%)	Mean score ±SD	F-*Stat*	P-Value
Family Social Support				
Good	142(58.2)	14.95±0.88	1.68	0.001*
Poor	102(41.8)	11.33±0.81		
Friends Social Support				
Good	89(36.5)	13.62±1.55	2.71	0.001*
Poor	155(63.5)	11.19±1.27		
Significant other Support				
Good	153(62.7)	14.91±0.20	1.93	0.001*
Poor	91(37.3)	10.71± 0.36		
Total				
Good	155(63.5)	37.77±1.13	3.72	0.0001*
Poor	89(36.5)	31.80±1.55		

*significant at p<0.05;

The relationship between total perceived social support and medication adherence in the respondents:

From (Table 4) below, the relationship between the total perceived social support and medication adherence in the respondents is statistically significant by Spearman's ranked correlations and ANOVA. Hence, the higher the medication adherence, the higher the perceived social support of the respondents. As the medication adherence value moves from low - to medium - to high, the mean value of total perceived social support increases from 36 – to- 37 – to- 39 and this is statistically significant by Spearman's ranked correlation with a p-value of 0.0001.

Table 4: Relationship between total perceived social support and medication adherence by non-parametric correlation

Medication adherence	Perceived social support	P	F-stat	p-value
High	39.01±2.07	0.298	2.25	0.0001*
Medium	37.79±1.63			
Low	36.93±1.45			

*significant at p<0.05

The odds for high medication adherence in the respondents:

Table 5 below shows the odds for high medication adherence in the respondents. A good total perceived social support (OR = 3.27; 95% CI = 2.25-4.71; P = 0.0001) has 3.27 times the odds for high medication adherence than a poor total perceived social support.

Table 5: Linear regression depicting the odds ratio for high medication adherence with perceived social support

Perceived Social Support	Number*(N)*	Standard error (S.E)	OR (95%CI)	p-value
Good	121	0.17	3.27(2.25 – 4.71)	0.0001*
*Poor***	58		1.00	

****Reference category

DISCUSSION

The mean age of the respondents in this study was 51.9 ± 6.1 years. This is in keeping with the findings from the study of Ufuoma et al.[13] carried out among persons with type 2 diabetes mellitus in Warri metropolis, Delta State in which they found a mean age of 54.8 ± 11. 9 years. Biru in the work on glycaemic control and its determinants among ambulatory patients with type 2 diabetes at Mizan Tepi University, Ethiopia, also found similar mean age of 52.68 ± 11.17.[14]

The finding in this study differs from the work of Iloh et al.[15] who had average age of 36.8 ± 5.4 years. The difference between this study and that of Iloh et al may be due to the study location. Iloh's study was done in a primary care (Family Medicine) clinic which is the point of entry for newly diagnosed type 2 diabetics while the present study was done in the Endocrinology clinic which serves as referral clinic where most often long standing poorly controlled and complicated cases are seen. The unprecedented aging in the world's population is a major contributor to the diabetic epidemic and older adults represent one of the fastest growing segments of the diabetic population[16]

A significant proportion of respondents in this study lie between the age ranges of 43 to 54 years (29.1%) while 54 years and above (45.5%) contributed the highest age bracket. This finding is similar to the study by Nduati et al. in Mathari National Teaching Hospital, Nairobi, Kenya who found the predominant age group to lie between 41 to 55 years (45.6%) and 56 to 70 years (40.%).[17] This finding shows that chronic non-communicable diseases such as type 2 diabetes mellitus are more common among middle age and elderly people. This may be attributed to sedentary lifestyle among these group of patients and the increased adoption of western lifestyle in our society all contributing to the rising incidence of chronic diseases in these age groups.

Female gender accounted for a higher percentage of the respondents (60.2%) in this study. This is similar to the study by Onodugo et al.[18] who found female gender accounting for 62.2% of the type 2 diabetic study participants in Enugu metropolis. In a community based cross-sectional study conducted by Anthony et al.[19] in rural communities of Abuja to determine the prevalence and awareness of diabetes mellitus, 66.9% of the diabetics were found to be females. The female preponderance in the study by Anthony et al. was attributed to the fact that more females than males were at home during the study period.

The female preponderance in this study can be attributed to the following possible explanations, one being an increase in the prevalence of type 2 diabetes mellitus among females and secondly, it can also be an indication of poor health seeking habit in males thus they may not present to hospital for screening and follow-up. Women have been known to have better health seeking behaviour for chronic diseases than men.[20]

Of the 244 participants in the study, 62.7% were married. This is similar to other studies, which showed a higher prevalence of diabetes among married participants.[21] This can be explained by the increase in the prevalence of type 2 diabetes with age, the younger age usually comprises of mainly single (unmarried) participants.

Most of the respondents in this study were literate, with primary and secondary education accounting for 31.6% each and tertiary education accounting for 21.3%. This may be due to the fact that this study was conducted in an urban setting where the inhabitants were predominantly civil servants who require a certain level of education in order to be employed and business persons who also require a certain level of education to perform effectively.

The relationship between total perceived social support and medication adherence in the respondents was statistically significant. The higher the perceived social support the higher the medication adherence. This is in keeping with the findings of other studies.[22,23] The implication of this finding to the clinicians is that the absence of social support for patients with diabetes could be a major risk factor for medication non-adherence and could be a surrogate marker of patients who generally are less likely to adhere to medication.

Conclusion: This study showed that perceived social support is significantly related to medication adherence in adult type 2 diabetic patients. It is, therefore, not enough to prescribe oral hypoglycemic medications during clinical consultations with patients with type 2 diabetes mellitus. Efforts should be made to persistently include the evaluation of social support as a component of care package for patients with diabetes mellitus. Family members and friends may have obligations to provide a wide variety of support to ensure that oral anti-diabetic medications are purchased and taken as at when due and as prescribed. Social support is, therefore, one of the important factors for reducing the risk of medication non-adherence.

Limitations: This study was a cross-sectional descriptive study where the relationship between the dependent and the independent variables cannot be established with certainty. The study relied on self-reported measures of medication adherence and social support which are subjective and are subject to recall bias and as such may limit the methodological quality of this research.

Recommendation: It is important that healthcare providers caring for patients with type 2 diabetes involve families, friends, or significant others in their management so as to improve their medication adherence. Routine evaluation of perceived social support is also recommended for type 2 diabetes patients with poor medication adherence.

Authors contributions

Okwuosa JC: Conceptualization, data collection, and manuscript writing
Nwajei AI: Conceptualization and manuscript writing
Owolabi AO: Data analysis
Ibuaku JC: Data collection and supervision of manuscript writing
Owolabi MO: Supervision of manuscript writing
Aniekwensi EC: Supervision of manuscript writing

Conflict of Interest: The authors hereby declare that there is no conflict of interest in writing this manuscript.

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