Relationships among Patient Diabetes Self-Care Behaviors, Depression and Self-Reported Medication Adherence in African Americans with Diabetes

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Introduction

The percentage of all emergency department (ED) visits for patients aged 35 and over made by those with diabetes are increasing every year. Moreover, the diabetes ED visit rate was about 2.5 times higher for those aged 75 and over than that for those aged 45–64 [1]. African Americans (AAs) with diabetes are 1.6 times more likely than Caucasians to have ED visits, and 2.8 times higher to have hospitalizations for diabetes-related conditions [2]. Some studies have suggested that factors such as education, mental status, health beliefs, financial and insurance status influence diabetes health outcomes. Self-care behaviors and medication adherence could also influence diabetes glycemic control, which in turn can lead to more ED visits/hospitalizations [3]. Depression is a common problem among people with diabetes. Research suggests that depression may affect self-care behaviors and medication adherence, however, the causal nature of this relationship has not been conclusively demonstrated [4-7].

Objectives

To determine the extent to which self-care behaviors and self-reported medication adherence are related to depression in older AAs with diabetes who presented to the ED.

Methods

This is a secondary analysis of a randomized controlled trial (RCT) involving patients with diabetes aged >/= 35 years admitted to ED between June 2017 through July 2019 at Thomas Jefferson University Hospital (TJUH) in Philadelphia, Pennsylvania. This secondary analysis of baseline data included 147 patients who were randomized to a multi-pronged, intensive diabetes intervention versus usual care. Demographic and personal characteristics were collected from the electronic health record and hemoglobin A1c was tested with a point of care test. Self-care behaviors were examined with the Diabetes Self-care Inventory tool (assessed 12 Diabetes self-care behaviors) [8]. Self-reported medication adherence was examined using the Morisky Medication Adherence Scale (MMAS-4) [9], which is a 4-item questionnaire. Depression was measured using the PHQ-9 (Patient health questionnaire 9) [10]. Data is analyzed using SPSS to compute correlations and examine multivariable relationships among variables.

Results

Table 1: Baseline Demographics (n=147)

Gender	N	%
Female	112	76.2%
Male	35	23.8%
	Mean	SD
Age	67.2	6.8
Education	12.9	2.2
Financial Status		
Pay for food	1.9	1.0
Pay for house	1.8	1.0
Pay for utilities	2.1	1.1
Pay for medical care	2.0	1.1
Morisky Medication Adherence Scale (MMAS-4)	1.0	1.0
Diabetes Self-care	52.6	16.4
Depression (PHQ-9)	7.8	5.2
HbA1c	8.2	2.0

Note:
Financial status: Difficulty paying for food, house, utilities and medical care; Scored 1 to 4; Higher scores indicate more difficulty;
MMAS-4: 4-item Morisky Medication Adherence Scale. Scored 0 to 4; Higher scores indicate worse adherence;
Diabetes Self-care: 12 Questions; Scored from 0 to 100 with higher scored indicating better self-care.
Depression: Patient health questionnaire 9; Scored from 0 to 27; Higher scores indicate more severe depressive symptoms

Table 2.1: Correlations with Diabetes Self-care (n=147)

	Correlations	P Value
Age	0.12	0.15
Education	0.02	0.83
Financial Status		
Pay for food	-0.05	0.53
Pay for house	-0.05	0.56
Pay for utilities	-0.14	0.10
Pay for medical care	-0.05	0.55
Morisky Medication Adherence Scale (MMAS-4)	-0.36**	0.00
Depression	-0.20*	0.02
HbA1c	-0.08	0.34

*. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed).

Table 2.2: Correlations with Medication Adherence (MMAS-4) (n=147)

	Correlations	P Value
Age	-0.24*	0.00
Education	0.11	0.19
Financial Status		
Pay for food	0.03	0.68
Pay for house	0.11	0.18
Pay for utilities	0.09	0.30
Pay for medical care	-0.05	0.53
Diabetes Self-care	-0.36**	0.00
Depression	0.35**	0.00
HbA1c	-0.02	0.85

*. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed).

Table 3: Multiple Regressions predicting Medication Adherence (MMAS-4) (n=147)

	Standardized Coefficients (Beta)	P Value
Diabetes Self-care	-0.30	0.00
Depression	0.29	0.00
	R	P Value
Multiple Regression	0.46	0.00

Conclusion

Better Diabetes self-care behaviors are strongly correlated with higher medication adherence in AA diabetes patients. Depression is an independent factor that could affect both self-care behaviors and medication adherence. Specifically, worse depression correlates with worse self-care behaviors and worse medication adherence. Overall, this could lead to further studies on how depression can effect diabetes management in clinical pharmacy practice.

References

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