

The Impact of Comorbid Depression in Adult African Americans with Diabetes: A Systematic Review

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Abstract

Adequate insight on the existence of diabetes comorbid depression can help healthcare providers prevent the occurrence of complications and depression among African American adult diabetics. This systematic review of the literature, focused on identifying the correlation between diabetes and depression among African American adults ages 19 to 65 years old in publications between 2013-2017. Articles from CINAHL, Medline, Science Direct, and Simmons Library were reviewed using the Roy adaptation model subsystems as the framework. The evidence from the study is grouped into Roy's subsystems of adaptation. The result from the study shows five out of the ten articles addressing diabetes comorbid depression in role function, four articles in physical complications, two in self-concept, and all the articles addressing interdependence in their discussion. The conclusion of the study is that role function and physical complications show high correlation between diabetes and depression therefore healthcare providers need to help patients concerning role function to prevent physical complications and depression.

Introduction

Type 2 Diabetes Mellitus (DM2), often referred to as adult onset diabetes, is a metabolic disorder that causes an increase of sugar in the blood stream (NIH, 2017). About 90% of those who are diagnosed with diabetes in the United States have type 2 diabetes (NIH 2017). The 2015 national diabetes statistics indicate that 30.3 million Americans have diabetes, which is an increase from 29 million in 2014 (CDC 2017) [1]. It is estimated that approximately 7.2 million people or one in four (23%) persons with diabetes has been clinically diagnosed (CDC, 2017) [1]. Prevalence for diagnosed diabetes is highest among minority populations, including American Indians/Alaska Natives (15.1%), non-Hispanic blacks (12.7%), and Hispanics (12.1%), compared to only 7.4% of non-Hispanic Whites (CDC 2017; Williams, Lynch, Knapp, & Egede, 2014) [1,2]. One third of the mortality rate differences between African Americans and Whites are due to cardiovascular diseases and diabetes (Crowley et al., 2013) [3].

From 2005 to 2006, One out of twenty Americans, ages 12 and above, reported having depression 4.8 percent of them were non-Hispanic Whites, while 8.0 percent of them were non-Hispanic Blacks ("Centers for disease control and prevention," 2013) [4]. The prevalence of Major Depressive Disorder among African American adults and non-Hispanic White adults in a 12-month study indicated a rate of 5.9% among African Americans and 6.9% among non-Hispanic Whites. However,

African Americans reported 56.5% rate of chronic disability from Major Depressive Disorder compared to 38.6% among non-Hispanic Whites (Ward & Brown, 2015) [5]. Persons with diabetes and depression have a greater risk of cognitive decline than people with only diabetes. They demonstrate a lower level of compliance to treatment than people without depression, and they also have more complications such as uncontrolled blood sugar and loss of lower limbs (Danna, Graham, Burns, Deschênes, & Schmitz, 2016) [6]. African Americans tend to experience more of the negative effects of depression comorbid diabetes because they are less likely to seek healthcare than non-Hispanic Whites (Ward & Brown, 2015) [5].

Individuals with depression often lack the ability for self-care. It is estimated depression that goes undiagnosed in 2/3 of patients with DM2 (Abbas, Nasir, Zehra, Noor, Jabbar, & Siddiqui, 2015; Katon, 2008) [7,8]. The combination of depression and DM2 is risk factor for nonadherence to diabetes self-care. Depressed patients with diabetes, are less likely to follow their treatment regimen, have a decreased ability to participate in diabetic self-care activities and tend to engage in unhealthy acts such as smoking and eating unhealthy foods (Adam, Folds, 2014; Katon, 2008) [8,9]. These patients experience difficulties in activities of daily living in addition to following the necessary behavioral treatment regime, including taking medication as directed, monitoring blood glucose levels and following the diabetic diet plan (Katon, 2008; Kalyani et al., 2017) [8,10], Burns, Deschênes, and Schmitz (2016) [11] stated that 4.31% of patients with no depression at baseline developed major depression before the end of their two-year research study into the comorbidity of diabetes and depression.

This review of the literature focused on studies that examined the correlation between diabetes and depression in African Americans between the ages of 19 to 65. This systematic review of current can help identify if the diagnosis of diabetes mellitus had a high correlation with symptoms of depression among our selected population in the United States.

Methods

The databases used for the search included CINAHL, Medline, Science Direct, and Simmons Library. Different keywords used in our search included diabetes and depression, African American adults with diabetes and depression, and diabetes self-care, African Americans diabetes and coping skills, African American obesity and depression. Themes from Roy's four subsystems for coping, from Roy's Adaptation Model (1976), were used to identify if poor adaptation to Diabetes could precipitate depression in the chosen population.

Inclusion Criteria Research studies English papers with studies conducted within the United States, as well as some international articles which contributed data to the background of the literature review, were included. Only peer reviewed articles published between 2012-2017 were accepted. In addition, only research studies with participants 19 to 65 years, subjects with no prior reported history of depression or

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other mental illness, and participants with no history of obesity were included. Research studies were excluded if they did not discuss diabetes, depression, and the correlation between them.

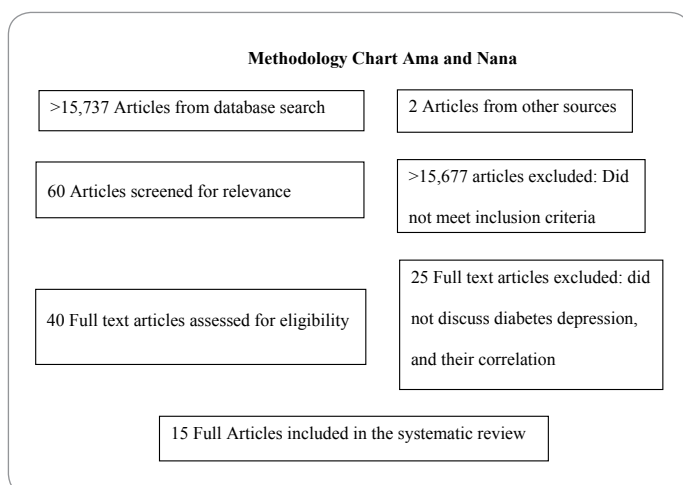
Analysis

Analysis of the research evidence was conducted with the use of a critique assistance table. Data on the table included the research design, level of evidence, date of publication, the purpose of the research, variables in the research, limitations, and the summary of the research findings. Data from the research findings were integrated into our research study based on their level of evidence and the relevance of the research findings towards the study of the correlation between diabetes and depression among African American men and women ages 19 to 65 years. All articles were reviewed by two researchers, with a third researcher evaluating the final selection to assure inclusion and exclusion criteria were met.

Results

The initial search identified over 15,000 articles. Abstracts of those articles that specifically identified DM-2, Depression, and African Americans were selected (n=60) and reviewed independently by the two researchers. Agreement was indicated on forty of the articles, which were then read again to determine if the correlation between DM-2 and depression was discussed (Chart 1: Article identification). Fifteen articles were identified as meeting all criteria and were then reviewed by the third reader for reliability before confirming their inclusion in the systematic review (Chart 2: Article review).

Ten out of the fifteen selected articles were grouped under the four themes. The articles were grouped based on the purpose, discussions, and the findings from the various research studies. All ten articles addressed interdependence, but they were not directly related to depression. The discussion of interdependence mostly related to interventions for preventing diabetes complications and depression in diabetics. Five out of the ten articles addressed role function in relation to diabetes comorbid depression. The issues concerning role function and diabetes comorbid depression included the fact that patients are less compliant with their treatment (Danna, Graham, Burns, Deschênes, & Schmitz, 2016) [6], they make unhealthy choices (Adam & Folds, 2014) [9], some patients have difficulty performing activities of daily living (Kalyani et al., 2017) [10], and the thought of having to inject themselves with insulin gives them negative emotions (Bockwoldt, Staffileno, Coke, & Quinn, 2016) [12]. Four out of the ten articles addressed the physical complications of diabetes and depression. People with diabetes and depression are more likely to have complications such as uncontrolled blood sugar levels, loss of limbs, and cognitive problems (Danna, Graham, Burns, Deschênes, & Schmitz, 2016) [6]. "African Americans report greater depressive symptoms" (Steinhardt et al., 2015, p. 507) [13]



from thinking about diabetic complications. African Americans have a higher rate of negative physical impact from diabetes and depression (Ward & Brown, 2015) [5]. In the first six months of a randomized control trial study, African Americans with uncontrolled blood sugar levels and other physical complications reported having depression (Williams, Lynch, Knapp, & Egede, 2014) [2]. Two of the articles addressed self-concept in relation to diabetes and depression. Besides expressing that their own self-care behaviors resulted in having to inject themselves with insulin, African Americans with uncontrolled diabetes in a qualitative cohort study had negative emotions such as fear of the unknown, becoming a burden to society, and fear of death (Bockwoldt, Staffileno, Coke, & Quinn, 2016, p. 172) [12]. Low self-esteem with food insecurity related to poor glycemic control lead frequent emergency room visits among patients with type 2 diabetes (Becerra, Allen, & Becerra, 2016) [14].

Discussion

This systematic review reveals evidence that a high correlation exists between DM-2 and depression. One article in this analysis provided level one evidence (systematic review), four provided level two evidence (randomized control trial), while four of the remaining five provided level two evidence for prognosis questions (cohort studies). The last one of the five articles provided level two evidence from a descriptive, cross sectional, quantitative survey [15].

The use of Roy's adaptation model as a theoretical frame work for this research study was very beneficial, providing a guide enabling the researchers to group their research evidence on Roy's subsystems. The themes enabled the researchers to find the subsystems with the highest correlation between diabetes and depression among African Americans ages 19 to 65 years old. It is essential that health care providers awareness of the correlation between diabetes and depression, especially in underserved communities, is increased [16]. An understanding of this relationship can help the provider direct patient care towards preventing complications, which often result from diabetes comorbid depression. Further research needs to be conducted to identify depression screening tools most suitable for assessing depression in minority, and underserved diabetic patients.

African American adults with diabetes should be routinely screened for depression during medical office visits. Routine screening can lead to early detection of depression, and allow for early intervention for this treatable disease. Assessing how patients cope with necessary diabetes management strategies can help providers become part of the ongoing treatment team, considering short and long-term methods to keep the patient well. "African Americans report greater depressive symptoms" (Steinhardt et al., 2015, p. 507) [13] due to thoughts about diabetic complications. Patients and their providers need to build trusting relationships that can help the patient openly voice their fears, concerns and disease management difficulties so to minimize future complications [17-19].

Limitations

There is a dearth of studies specifically focused on African Americans with comorbid diabetes and depression. As a result, the researchers used some articles which involved patients with different ethnicities. Randomized control trial studies on African Americans with depression are also scarce.

Conclusion

Depression among African American adults with diabetes worsens the long-term prognosis of this disease. Depression is a treatable disease, however at present, only a limited amount of research is investigating this problem. This review provides the evidence that indicates how physical complications and impaired role function have a higher correlation

Authors	Level of Evidence: Type of Research	Methods: Setting Sample#	Authors' Date of Publication	Research Question/Hypothesis/Purpose	Variables: Dependent Independent	Identified Limitations	Results/conclusion
Danna et al. (2016)	Level 1 Systematic Review	Comprehensive review of literature Sample #: 15 articles	2016	To determine if people with diabetes comorbid depression have a higher risk of cognitive decline.	Independent: Comorbid diabetes and depression. Dependent: Level of cognitive decline.	The study identifies a high risk of bias which could influence the result of the study	Comorbid diabetes and depression was linked with higher rate of cognitive decline
Crowley et al. (2013)	Level 2 Randomized Control Trial	Randomly selected adults from outpatient clinics in Durham, NC Sample #: 359 African American adults	2013	To evaluate the effectiveness of the change study intervention (self-management education and medication management) in reducing cardiovascular disease risk among African American adults with type 2 diabetes	Independent: Change Study Intervention Dependent: Risk of cardiovascular disease among African Americans with type 2 diabetes	The study results might not be applicable to other African Americans in different geographical areas since all participants were in Durham, NC	Intervention group members reported higher rate of medication adherence, but not reduction in cardiovascular disease risk
Steinhardt et al. (2015)	Level 2 Randomized Control Trial	Randomly selected 55 African American Adults. Sample #: 55 individuals	2015	To evaluate the effectiveness of resilience based intervention diabetes self-management education on psychological and physiological outcomes of diabetes.	Independent: Resilience intervention education. Dependent: Psychological and physiological outcomes of African Americans with T2DM	The research only had 55 participants and was in a form of a quasi-experimental design instead of a real randomized control trial therefore the results cannot be generalized. Self-reported survey results might be inaccurate.	There was a significant improvement in blood glucose and cholesterol levels among the experimental group after 6 months. Providing resilience based education for diabetes self-management to African American Adults can help them avoid psychological and physiological consequences of T2DM.
Williams et al. (2014)	Level 2 Randomized control trial	Randomly selected African American adults from outpatient clinics in South Carolina Sample #: 200	2014	To study the effectiveness of technology intensified diabetes education and skills training	Independent: Technology Intensified Diabetes Education/Skills (TIDES) Dependent: Metabolic control and diabetes complications	The results of this study might not be applicable to the general population since participants were all located in South Carolina	Improved metabolic control and lower rate of diabetes complications

<p>Becerra et al (2016)</p>	<p>Level 2 Meaning/Process questions Single in-depth qualitative study</p>	<p>California Health Interview Survey (CHIS) Sample #: 8252 adults from different ethnicities</p>	<p>2016</p>	<p>Survey (CHIS), 2009, 2011/2012 data selected CHIS participants who were aged 18 or older medically diagnosed of T2DM; resulting in a total of 8252 participants.</p>	<p>Dependent: Food insecurity and low self-efficacy. Independent: adults with type II diabetes mellitus</p>	<p>The study population was general (Adults), could have been more specific with ethnicity.</p>	<p>Those with low food security (12.96%) and low self efficacy (15.14%), reported significantly higher prevalence of T2DM-related healthcare utilization, as compared to their counterparts. Both living with low food security and having low self-efficacy were also associated with over two-fold increase in healthcare utilization.</p>
<p>Bockwoldt et al (2016)</p>	<p>Level 2 Meaning/Process questions Qualitative descriptive study</p>	<p>Three 1-hour focus groups were conducted with a total of 13 participants. Thematic analysis of transcribed audio recordings used the constant comparative method. Sample # 13</p>	<p>2016</p>	<p>What is the perception of insulin treatment among midlife and older African American (AA) adults with type 2 diabetes, or how perception affects self-management behaviors</p>	<p>Dependent: Perception of insulin treatment Independent: AA adults with type 2 DM</p>	<p>The sample was small and mainly AA women; results may have been different if the sample included more AA men whose gender roles, health behaviors, and health disparities differ from AA women. Most of the participants where no call no show even though each participant received a call the day before. No reasons were given why the participants did not show up. All participants had an established relationship with a diabetes educator or nurse practitioner; perceptions of insulin may have been different from those who had not received diabetes education in the past. The study did not explore how perceptions evolved or whether perception of insulin changes once insulin treatment commences and over the long term.</p>	<p>Three major themes developed which reflected the Roys' adaptation (RAM) module “ (a) insulin as instigator of negative emotions, (b) adapting to my lifestyle with insulin, and (c) becoming an insulin user: a new identity. The themes are described and organized according to the RAM's modes of adaptation.” This study suggest that interventions that change negative perceptions of insulin to more positive perceptions may improve overall adaptation to T2DM. Nurses need to do more education to correct misconception of insulin treatment and T2DM management.</p>

<p>Kalyani et al, (2017)</p>	<p>Level 2 Single Cohort study</p>	<p>Jackson, MS 2989 African American Adults Sample # 2989 Individuals</p>	<p>9 Mar. 2017</p>	<p>Purpose: Investigate the degree to which comorbid depression contributes to the relationship between diabetes and functional Disability.</p>	<p>Dependent: Comorbid depression Independent: Relationship between diabetes and functional disability</p>	<p>The results from the study cannot be generalized to other geographic areas other than Jackson, MS because all participants were located in the above geographic area.</p>	<p>Having both depression and diabetes, there is a higher level of functional disability. Participants with both depression and diabetes had a higher level of functional disability.</p>
<p>Adam et al (2014)</p>	<p>Level 2 A cross-sectional, descriptive, correlational design</p>	<p>A primary-care clinic and an endocrinology clinic in the mid-western United States Sample #: 55 adults</p>	<p>October 9, 2014</p>	<p>Depression and self-efficacy can be major factors in treatment adherence for patients with type 2 diabetes.</p>	<p>Dependent: depressive symptoms, self-efficacy, and adherence Independent: Patients with type 2 DM</p>	<p>The study cannot be generalized to other geographic areas because the population were selected from Midwestern US</p>	<p>There were no significant gender differences in depressive symptoms, self-efficacy, and adherence. As depressive symptoms increase, diet and exercise adherence decrease. Also, as self-efficacy increases, adherence to diet, exercise, and smoking cessation increases. Last, as self-efficacy increases, depressive symptoms decrease.</p>
<p>Gebreab et al. (2017)</p>	<p>Level 2 Single Cohort Study</p>	<p>African American Adults' Neighborhood Sample #: 3670 adults</p>	<p>Dec 27, 2016</p>	<p>Hypothesis: Neighborhood with good resources such as high social cohesion, good quality grocery stores have lower rate of diabetes type 2 incidence than neighborhoods without the above resources.</p>	<p>Dependent: Incidence of Type 2 DM Independent: Neighborhood Resources and cohesion</p>	<p>The study cannot be generalized to other geographic areas because it involved only African American adults who lived in Jackson, MS. Self-reported measures such as diet and activity could involve errors.</p>	<p>Low social cohesion, shows a higher incidence of T2DM. Stress from neighborhood problems such as violence can cause people to live unhealthy behavior which can lead to the development of T2DM. 521 out of 3670 participants who did not have T2DM at baseline developed T2DM during the study. They were more likely to live neighborhoods with low social cohesion, higher violence rate, both favorable and unfavorable food stores, activity resources, but they were less active</p>

<p>Burns et al, (2016)</p>	<p>Level 2 Single Prospective/ Cohort Study</p>	<p>Community- dwelling, English and French- speaking residents of the Canadian province of Québec. Sample #: 1742 adults</p>	<p>2016</p>	<p>Individuals with type 2 diabetes are at greater risk of developing a number of mental health conditions, including depression, anxiety, and diabetes-related distress, than individuals without type 2 diabetes.</p>	<p>Dependent:DM related mental health conditions Independent: Individuals with type 2 DM</p>	<p>The study measured coping strategies with the CISS-21. Its emotion- oriented subscale has been criticized for combining approach and avoidance strategies into a single subscale. The measures of depression and anxiety that were used are screening tools. They are not diagnostic assessment tools. Future work should seek to replicate these findings with clinical assessments of depression and anxiety.</p>	<p>Previous studies of coping strategies and mental health in individuals with diabetes have generally been limited to depression and anxiety. However, diabetes-related distress is also an important mental health consideration Coping, teaching skills and enhancing self-efficacy may be most beneficial to target emotion- oriented coping.</p>
						<p>The sample did not present participants with a long history of diabetes. The sample was predominantly Caucasian (93%) and married/living as married (63%). Demographic characteristics can be substitutes for social and material resources, which can influence coping and mental health.</p>	

with depression than self-concept and patient's support systems. When health care providers focus on providing measures to equip patients for better outcome self-care in diabetes, especially through the treatment of co-morbid depression, patients and their providers will benefit from it.

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