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T2DM Patients' Demographic Characteristics as Moderators of the Relationship between Diabetes Perception and Psychological Distress

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Abstract This study examined the relationship the relationship between T2DM illness Perception and Psychological Distress and further investigated whether this relationship is influenced by demographic characteristics such as Sex, Age and level of Education. A total of 139 persons living with T2DM were sampled from Korle-Bu Teaching Hospital in Accra, Ghana. The respondents were administered with demographic questionnaire, the Brief Illness Perception Questionnaire and the Brief Symptom Inventory. Pearson correlation and Hierarchical Multiple regression analyses were done and the results indicate that illness perception is significantly and positively associated with the level of psychological distress among persons with T2DM. However, this relationship was not significantly moderated by their sex, age and level of education. The findings from the study indicate that the association between illness perception and psychological distress among persons with type-2 diabetes is not significantly affected by their demographic characteristics age, sex and level of education. It is therefore concluded that the focus of psychological interventions should be targeted at modifying the negative thought patterns of the patients regarding their illness.

Keywords Illness Perception, Psychological Distress, T2DM, Ghana

1. Introduction

The burden of chronic non-communicable diseases in Sub-Saharan Africa has been highlighted by several authors (e.g. [1]) and diabetes mellitus is one of these prominent diseases. However, the prevalence of Type-2 diabetes mellitus (T2DM) has been noted as constituting majority of the diabetes cases in Sub-Saharan Africa [2-4] with its attendant problems to the individual and society at large. Several physical and psychological comorbidities are associated with living with T2DM which affect the prognosis and course of the disease. Some of these physical comorbidities include retinopathy [5] and microvascular complications [6, 4]. Some notable psychological complications among persons with T2DM include affective disorders, depression, anxiety problems and diabetes-related distress [7-9].

The focus of this paper is on the level of psychological distress experienced by persons living with T2DM and factors are associated with the level of distress. The identification of these factors is important to the extent that the presence of psychological distress of any form interferes with self-care behaviors such as medication adherence, diet and exercise regimens [10]. Some personal socio-demographic characteristics of persons living with T2DM have been shown to be predictive of psychological distress. For instance, female sex, younger age, overweight, concern about medication, ethnicity, past psychiatric history [11, 7].

Similarly, [7] explored the levels of physical and psychological wellbeing among adults with Type 2 diabetes and sought to identify the clinical, demographic, and psychological factors that are associated with differences in wellbeing in New Zealand. Personal characteristics such as young age, overweight and concerns about prescribed medications were significantly associated with diabetes-related distress. Similarly, [11] examined major depressive disorder and its associated factors among patients with type-2 diabetes and reported that probability of developing depression was predicted significantly by past history of depression and the experience of negative affect by the patients. Some mediational relationships and moderations were found between diabetes and development of major depressive disorder.

In a prevalence study by [12], the results indicated that

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patients living with diabetes experience significant levels of depression and anxiety that qualify for clinical diagnosis. Patients' characteristics such as age, sex, marital status, exercise, employment status, income, smoking, locality and their level of glycemic control were significantly associated with the levels of depression and anxiety. The findings shed more light on the diabetes- mental health link but how the patients interpret their illness was not taken into consideration as illness perception has been found to significantly influence the level of psychological distress and mental health problems. This study outcome provide the basis for further studies as such personal characteristics may not play significant roles in other cultures and settings.

In a related study, [13] found among persons living with Type-2 diabetes that illness perception dimensions such as perceptions of concern, personal control, concern, treatment control, and understanding of the diabetes were significant predictors of body mass index, fasting blood glucose, total cholesterol and blood pressure respectively. These findings indicate that in dealing with persons living with chronic illnesses like Type-2 diabetes, their illness representations should be included in their management regimen. The findings givecredence to the fact the individual's cognitive appraisal of the illness is important. In a similar study controlling for patients' demographic characteristics, [7] observed that illness perceptions accounted for 15% of differences in distress about diabetes. However, poor mental health and illness severity alone do not explain differences in diabetes-related emotional adjustment and the authors concluded that 'making sense' of diabetes may be central to successfully managing the emotional consequences of diabetes.

In a study among diabetic patients, illness and treatment perceptions were found to be associated with several health-related outcomes such as insulin adherence, antihypertensive and cholesterol medications, diet and exercise [14]. It was also demonstrated that insulin adherence and perceived personal control predicted blood glucose control among type-1 diabetic patients whiles antihypertensive drug and perceived personal control predicted blood glucose levels of type-2 diabetic patients.

However, there is a dearth of diabetes literature within our Ghanaian context to The aims of this study are to examine the impact of illness perception on the levels of psychological distress among persons with Type-2 diabetes and also to determine whether demographic characteristics such as age, sex and education have any significant influences on this illness perception-psychological distress relationship. We therefore hypothesized that illness perception will be significantly and positively associated with the level of psychological distress among persons with Type-2 diabetes. It was further hypothesized that age, sex and level of education of Type-2 diabetic patients would significantly moderate the relationship between their illness perception and psychological distress as some earlier studies found patients' demographic characteristics to have significant influence on their psychological distress.

2. Methodology

Population and Sample:

The population for this study consisted of all persons living with Type-2 diabetes who attend Korle-Bu Teaching hospital in Ghana. The Korle-Bu teaching hospital was chosen because it has a Diabetes Research Centre which enables researchers to have access to their centre for research related activities. A total of 139 persons living with Type-2 diabetes were purposively selected from National Diabetes Research Centre for the study. Patients who were below the age of 18years and those who were on admission at the centre were excluded from the sample. Patients who were disoriented to time and place were excluded from the study.

Measures:

Illness perception in this study was measured with the Brief Illness Perception Questionnaire developed by [15]. The scale has nine items of which eight are close-ended and the final item is open-ended. The entire scale measures how patients represent their cognitively and emotionally in terms of the perceived illness consequences, duration, personal control, treatment control, symptoms, coherence, concern, emotional response, and causes. The scale has a response format with scores on each item ranging from 0 to 10.The scale has a Cronbach alpha of 0.70 and a good concurrent validity with relevant measures, predictive validity and discriminate validity [15]. The total illness perception score was obtained for each respondent by adding the total scores on the scale after reverse scoringitems 3, 4, and 7. A higher score reflects a more threatening view of the illness and a lower score reflects a less threatening view of diabetes.

Psychological distress was measured with the Brief Symptom Inventory developed by [16]. The inventory has 53-items measures which measure psychological symptom patterns among psychiatric patients, medical patients as well as non-patients. The scale as whole measure the level of psychological distress but has profiles of nine primary symptom dimensions and three global indices of distress [16]. These dimensions are the levels of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. The 5-point Likert response format was used and the responses are as follow; 0 = "not at all", 1= "a little bit", 2= "moderately", 3= "quite a bit", and 4 = "extremely". The Brief Symptom Inventory has a high internal consistency with Cronbach's alpha ranging between 0.71 and 0.85.

Design:

A correlational cross-sectional survey design was adopted for this study as the variables of interest cannot be experimentally manipulated and the respondents were contacted once which naturally yields itself to a survey.

Procedure:

In order to comply with the ethical guidelines involves in the use of human participants in research, we obtained

ethical clearance to carry out the study from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research, University of Ghana, Legon. The ethical clearance certificate was shown to the authorities in charge of the hospital used in the study for permission to use the facility and the patients reporting for out-patient care. The researchers were introduced to the patients waiting to see their doctors. Each patient was approached individually and asked to participate in the study. After reading the general information about the study, the patients who agreed to take part signed the consent form and proceeded to complete the questionnaires. The completed questionnaires were retrieved for coding and statistical analysis. The respondents were thanked for their time and effort in completing the questionnaires. Those who had questions after completing the questionnaires were attended to accordingly.

Data Analysis:

Descriptive statistics were used to summarize the data. The stated hypotheses were tested using both the Pearson product moment correlation and a hierarchical regression. The Pearson correlation was used to establish relationships among the various variables. The hierarchical regression analysis was used to test the moderation effects of sex, age and education on the relationship between illness perception and psychological distress among persons living with diabetes.

3. Results

The SPSS 18.00 was used in summarizing the data. The demographic characteristics of the respondents in the study are summarized in Table 3.1 below.

Table 3.1. Descriptive Statistics of the Diabetic Patients' Demographic Characteristics

Variables	Frequency	Percentage (%)
Sex		
Male	34	24.5
Female	105	75.5
Age		
40-49 years	9	6.5
50-59 years	47	33.8
60 years and above	83	59.7
Education		
No formal education	19	13.7
Primary	67	48.2
Secondary	36	25.9
Tertiary	17	12.2
Marital Status		
Single	9	6.5
Married	86	61.9
Separated/Divorced	10	7.2
Widowed	34	24.5
Religion		
Christianity	128	92.1
Islam	10	7.2
Others	1	.7
Duration of illness	Mean = 7.30	SD = 4.76

Hypotheses Testing:

To determine whether a significant relationship exists between diabetic patients overall illness perception and psychological distress, the Pearson product moment correlation was used to relate the variables and the results are summarized in Table 3.2 below.

Table 3.2. Correlation Matrices of the Relationships between the Study Variables

Variables	1	2	3	4	5	6	7
Sex							
Age	-.11						
Marital Status	.23**	.32**					
Religion	-.11	.10	.00				
Education	-.32**	-.03.	-.21*	.02			
Duration	-.01	.26**	.14	.14	.01		
Perception	-.12	.12	.14	.01	.05	.15	
Distress	.21*	.05	.15	-.01	-.18*	.10	.22*

**= significant at the .05 level of significance,*
***= significant at the .01 level of significance.*

It was observed from the correlation matrices table 3.2 above that a significant positive relationship exists between Type-2 diabetic patients' overall illness perception and psychological distress at the .05 level of significance, $r(137) = .22$, $\rho < .05$. This significant positive relationship obtained between overall illness perception and psychological distress supports the stated hypothesis that overall illness perception will significantly predict the level of psychological distress among persons with Type-2 diabetes.

To determine whether the age, sex and education moderated the relationship between overall illness perception and psychological distress among Type-2 diabetic patients, a hierarchical regression analysis was employed and the results are summarized in Table 3.3 below;

An examination of the hierarchical regression table 3.3 above shows that sex of Type-2 diabetic patients did not significantly moderate the relationship between overall illness perception and psychological distress at the .05 level of significance, Perception * Sex ($\beta = .00$, $t = -.03$, $\rho > .05$). Similarly, age of Type-2 diabetic patients did not significantly moderate the relationship between overall illness perception and psychological distress at the .05 level of significance, Perception * Age ($\beta = -.02$, $t = -.23$, $\rho > .05$) and educational level of Type-2 diabetic patients did not significantly moderate the relationship between overall illness perception and psychological distress at the .05 level of significance, Perception * Sex ($\beta = -.07$, $t = -.69$, $\rho > .05$). Thus, the stated hypothesis that age, sex and level of education of diabetic patients would significantly moderate the relationship between their illness perception and psychological distress is not supported with the data.

4. Discussion and Recommendations

Psychological distress among persons living with diabetes of any form has been associated with poor health outcomes and as a result, this study sought to examine how the level of psychological distress experienced by persons living type-2 diabetes mellitus (T2DM) is influenced by their cognitive and emotional representation of the condition. The results from the study showed that illness perception is significantly and positively associated with the level of psychological distress among persons living with type-2 diabetes. This means that the perception of Type-2 diabetes as being very threatening is associated with elevated levels of psychological distress such as anxiety, depression and obsessive compulsion among others. Thus, the emotional and cognitive interpretations given to illness by patients play significant role roles that need not be discounted in planning interventions programs.

The significant association between illness perception and level of psychological distress has been reported by some researchers with majority indicating that when diabetes is perceived as threatening, it results in poor psychological outcomes. For instance, [7] reported a significant association between illness perception and diabetes related distress after controlling for age, clinical characteristics, and mental health. This led the authors to argue that 'making sense' of diabetes could be pivotal in dealing with the emotional consequences of living T2DM. Similar findings have been reported by other authors that illness perception is associated with several other health-related outcomes among persons living with T2DM (e.g. [14, 13]).

This study did not find any significant moderation effect of age, sex and education on the relationship between illness perception and diabetes-related distress among persons living with Type-2 diabetes. In contrast, some earlier studies have reported differences in the levels of psychological distress among persons with T2DM to be due to their demographic characteristics such as sex, age and educational levels as the researchers concluded that these characteristics may predispose to develop illness related psychological distress [11, 12]. The finding shows that the demographic characteristics considered in this study neither strengthen or weakened the relationship between the perception of Type-2 diabetes by the patients and their psychological distress. This implies that the emotional and cognitive representations of the illness is much important than the personal demographic characteristics of the individual patients.

The results from this study have implications for delivery of diabetes care and education for the persons living with Type-2 diabetes. The focus of the intervention programs should emphasize the understanding of the illness which shapes the emotional and cognitive representations of the illness. The outcomes of the study also calls for a shift in the healthcare delivery to the persons living with Type-2 diabetes to include other healthcare professional to deal with the levels of psychological distress which could be worsen by the thought patterns of the patients. Thus, the bio-psychosocial approach which encompasses the services of all health workers should be adopted in the healthcare system to provide holistic healthcare services to the patients.

However, the results of this study should be interpreted by taking into cognizance some limitations such as the relatively small sample size and the use of one health facility which might not represent the views and perceptions of all persons living with Type-2 diabetes. Volunteer bias may also serve as one key limitation of this study and future studies should employ random sampling to eliminate volunteer bias. Further studies should compare the illness perception between persons living with Type-1 and 2 diabetes and the psychosocial factors that influence their illness perception and psychological distress.

Table 3.3. Hierarchical Regression Analysis of the Moderation effects of sex, age and education on the relationship between illness perception and psychological Distress

Model	B	SEB	β	R^2	ΔR^2	t	ρ
Step 1 Constant	.14	.19				.71	.480
Illness Perception	.01	.01	.22	.047	.047	2.60	.010
Step 2 Constant	-.32	.48				-.68	.500
Illness Perception	.02	.01	.24			2.96	.004
Sex	.26	.11	.20			2.34	.021
Age	.03	.07	.03			.41	.683
Education	-.08	.05	-.13	.119	.073	-1.47	.143
Step 3 Constant	-.40	.51				-.77	.441
Illness Perception	.02	.01	.26			2.70	.008
Sex	.26	.11	.20			2.27	.025
Age	.03	.08	.04			.44	.660
Education	-.07	.06	-.12			-1.34	.184
Perception*Sex	.00	.06	.00			-.03	.974
Perception*Age	-.02	.08	-.02			-.23	.815
Perception*Education	-.04	.06	-.07	.124	.004	-.69	.494

REFERENCES

[1] A. de-Graft Aikins, E. Owusu-Dabo, C, Agyemang. Diabetes in Ghana: review of research on prevalence, experiences and healthcare, 2013, In A. de-Graft Aikins, S. Agyei-Mensah and C. Agyemang (Eds). Ghana's Chronic Non-communicable disease burden: multidisciplinary perspectives. Accra: Sub Saharan Publishers.

[2] Hall, V., Thomsen, R. W., Henriksen, O., Lohse, N., 2011, Diabetes in Sub Saharan Africa 1999-2011: epidemiology and public health implications. A systematic review. BMC Public Health 11(1), 564.doi:10.1186/1471-2458-11-564.

[3] Mbanya, J. C., Motala, A. A., Sobngwi, E., Assah, F. K., Enoru, S. T., 2010, Diabetes in sub-Saharan Africa. Lancet, 375(9733), 2254-2266. doi: 10.1016/S0140-6736(10)60550-8.

[4] Tuei, V. C., Maiyoh, G. K., Ha, C. E., 2010, Type 2 diabetes mellitus and obesity in sub-Saharan Africa. *Diabetes/ Metabolism Research and Reviews, 26*(6), 433-45. doi:10.1002/dmrr.1106.

[5] Mbanya, J. C., and Sobngwi, E., 2003, Diabetes microvascular and macrovascular disease in Africa. Journal of Cardiovascular Risk, 10, 97-102.

[6] Liu, Z., Fu, C., Wang, W., Xu, B., 2010, Prevalence of chronic complications of type 2 diabetes mellitus in outpatients - a cross-sectional hospital based survey in urban China. Health Quality of Life Outcomes, 8,62-70.

[7] Paddison, C. A. M., Alpass, F. M., Stephens, C. V., 2010, Using the Common Sense Model of illness self-regulation to understand diabetes-related distress: The importance of being able to make sense of diabetes. New Zealand Journal of Psychology, 39(1), 45-50.

[8] Roupa, Z., Koulouri, A., Sotiropoulou, P., Makrinika, E., Marneras, X., Lahana, I., Gourni, M., 2009, Anxiety and depression in patients with Type 2 Diabetes Mellitus, depending on sex and body mass index. Health Science Journal, 3(1), 32-40.

[9] Hermanns, N., Kulzer, B., Krichbaum, M., Kubiak, T., Haak, T., 2005, How to screen for depression and emotional problems in patients with diabetes: Comparison of screening characteristics of depression questionnaires, measurement of diabetes-specific emotional problems and standard clinical assessment. Diabetes Medicine, 22, 293-300.

[10] Hermanns, N., and Kulzer, B., 2008, Diabetes and Depression - A Burdensome Co-morbidity. European Endocrinology, 4(2), 19-22.

[11] Naranjo, D. M., Fisher, F. L., Areán, P. A., Hessler, D., Mullan, J., 2011, Patients with Type-2 Diabetes at Risk for Major Depressive Disorder over Time. Annals of Family Medicine, 9, 115-120.

[12] Jadoon, N. A., Shahzad, M. A., Munir, W., Bashir, I., 2012, Socio-demographic, clinical and lifestyle factors associated with psychiatric illness among individuals with diabetes. International Journal of Diabetes in Developing Countries, 32(2), 98-104.

[13] Petricek, G., Vrcić-Keglević, M., Vuletić, G., Cerovečki, V., Ožvačić, Z., Murgić, L., 2009, Illness Perception and Cardiovascular Risk Factors in Patients with Type- 2 Diabetes: Cross-sectional Questionnaire Study. Croatia Medical Journal, 50(6), 583-593.

[14] Broadbent, E., Donkin, L., Stroh, J. C., 2011, Illness and Treatment Perceptions Are Associated With Adherence to Medications, Diet, and Exercise in Diabetic Patients. Diabetes Care, 34(2), 338-340.

[15] Broadbent, E., Petrie, K. J., Main, J., Weinman, J., 2006, The Brief Illness Perception Questionnaire (BIPQ). Journal of Psychosomatic Research, 60, 631-637.

[16] L. R. Derogatis, Brief Symptoms Inventory (BSI): Administration, scoring and procedures manual (3rd ed.). Minneapolis: NCS Pearson, Inc, 1993.