International Journal of Research in Medical Sciences
Onu R et al. Int J Res Med Sci. 2018 Jun;6(6):1856-1861
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20181964

Original Research Article

Perceived severity of diabetes and associated factors among patients attending a referral hospital in Port Harcourt, Nigeria

Roseline Onu[1], Seye Babatunde[1,2]*

[1]Department of Preventive and Social Medicine, University of Port Harcourt, Port Harcourt, Nigeria
[2]Centre for Health and Development, University of Port Harcourt, Port Harcourt, Nigeria

Received: 17 April 2018
Accepted: 23 April 2018

***Correspondence:**
Dr. Seye Babatunde,
E-mail: seyebabs@gmail.com

ABSTRACT

Background: Nigeria has recorded a rising profile of diabetes in recent times due to urbanization and transition to westernized lifestyles. Perceived severity, the extent to which people deem their ailment to be severe, is an attitudinal construct that partly explains how likely people would modify their health behaviours. The study aimed to determine the level and associated factors influencing perceived severity among type 2 diabetes patients in Port Harcourt, Nigeria.
Methods: A cross-sectional study was conducted among 119 adults at the University of Port Harcourt Teaching Hospital. They responded to a structured interviewer-administered questionnaire that included a 7-item scale on perceived severity, and socio-demographic and medical-related characteristics.
Results: The mean age was 56.84±11.51 years; 42.0% were males and 58.0% females. Mean diabetes duration was 7.60±5.58 years and 48.7% reported hypertension as a co-morbidity. About half (56.3%) had low Perceived Severity Score (mean score<3) versus 43.7% with high Perceived Severity Score (χ^2=3.782, p=0.052). Sex, employment status, religion, duration of diabetes and presence of co-morbidity appeared to show an inverse relationship with perceived severity, however there was no valid association (p>0.05).
Conclusions: This study revealed an equal prevalence of low and high perceived severity of diabetes. Findings suggested that an unemployed Christian female with over 5 years' diabetes history and no co-existing illness was likely to have a low perceived severity. We recommend further studies to examine other attitudinal constructs, beyond perceived severity, for better understanding of beliefs underpinning the health behavior of diabetes patients in different settings.

Keywords: Associated factors, diabetes, Port harcourt, Perceived severity, Nigeria

INTRODUCTION

Worldwide, diabetes has been established as a prototypical chronic disease with life threatening effects that affected 347 million people in 2008 and 387 million in 2014.[1]

In 2014, diabetes was the cause of 4.9 million deaths and was accountable for 11 % of the total global health expenses. More than 80% of diabetes deaths occur in low- and middle-income countries. By 2030, diabetes is projected to become the seventh leading cause of death.[2]

Nigeria has also recorded a rising profile of diabetes since 1960.[3,4] The Nigerian population is undergoing transition with people moving from the traditional rural jobs to urban areas in the thousands on a daily basis to take on semi-skilled and unskilled labor.[5] As Nigeria

modernizes and copies western lifestyles, the disease frequency is on the increase across all works of life.[6] Researches have provided evidence that the prevalence of diabetes in Port Harcourt, the epi-centre of the oil and gas industry in Southern Nigeria, is comparable with what obtains in western countries, because of the rapid urbanization, industrialization and the insidious "Westernisation" of the lifestyle of the populace.[7-9]

Perception is the way or how a person understands a phenomenon; this separates perception from reality, the actual existence of something.[10] "Perceived severity" alludes to an individual's beliefs about the relevance or greatness of a health risk, that is, the extent to which people deem a specific ailment or condition to be severe.[11] Different people can have different perceptions of the same thing, which could be shaped by the society in which the person lives. According to Wettlaufer, the 'thinking design' of an individual is decided by various variables, including social esteems, beliefs, myths, attitudes, education, rules, laws, etc.[10] Several behaviour theories have been proposed as the underpinning logic on the influence of the perception of disease severity by patients suffering from mostly chronic diseases such as the Health Belief Model (HBM).[11-13]

The HBM is a multi-dimensional construct; it proposes that perceived vulnerability to disease and disease severity combine to form 'threat', and that threat perception motivates action.[11] Ultimately, individuals are more likely to modify their behaviors if they perceive that they are susceptible to developing a disease, and that the consequences of the disease are severe.[11] Perceived severity has been reported to be associated with adherence with diabetes self-care behaviours.[14-18] The importance of studying self-perception of disease severity lies in the fact that individuals are more likely to modify their behaviours if they perceive that they are susceptible to developing diabetes, or that the consequences of developing diabetes are severe.[14]

A study in Iran among diabetes patients at a care centre reported that perceived susceptibility and severity predicted 12.1% of variances in self-care management.[15] Ayele and colleagues found that half of patients with diabetes in Eastern Ethiopia reported moderate level of perceived severity of their condition.[16] Though studies in Nigeria have documented the emotional distress and outright psychiatric illnesses associated with diabetes.[19-21] We found only two studies that had investigated perception of severity of illness from the patients' belief construct among Nigerians.[13,22]

The aim of this study therefore was to investigate patients' self-reported perceived severity of diabetes and to determine the influence of selected socio-demographic and medical-related characteristics of patients on perceived severity of diabetes in Port Harcourt, southern Nigeria.

METHODS

Study setting

This study was carried out as part of a larger study on the influences of diabetes self-management among patients receiving treatment at the medical out-patient clinic, specifically the Endocrinology Clinic at the University of Port Harcourt Teaching Hospital, Port Harcourt. The UPTH is the leading tertiary hospitals in Port Harcourt, the capital city of Rivers State in southern Nigeria. It runs several specialist clinics including the diabetic clinic, which usually holds every Wednesdays. The study design was descriptive cross-sectional.

Study population

The study population included all registered patients with type 2 diabetes receiving care and treatment at the out-patient clinic of the endocrine unit, medical out-patient department, in UPTH. A sample size of 110 was selected by stratified sampling technique, with each group of patients that attended in a week constituting a stratum.

Study instrument

The study instrument used was a structured interviewer-administered questionnaire. It comprised four sections on socio-demographic information; medical and social history including duration of diabetes, presence of associated chronic condition, presence of co-morbidity and alcohol intake; and a developed scale for assessing perceived severity of diabetes. The perceived severity questions were a total of seven, to measure: perception that the development of certain listed symptoms resulted from their diabetes condition; perception that their diabetes caused them to have an infection; perception that diabetes is an incurable condition.

In addition, four questions investigating actual possibility of occurrence of known complications of diabetes were included: have you ever been referred to eye specialist? have you ever had a wound refusing to heal? Presence of known complications of diabetes? Presence of known co-morbidities of diabetes? Responses were assigned scores of 1 (if response is a 'yes' or indicate presence of one or more symptoms) or 0 (if response is negative or indicate absence of any symptom). The sum of scores was used to develop a Perceived Severity Scale (PSS) using a score >3 as high perceived severity (i.e. worthy of clinical attention) and <3 as low perceived severity (i.e. not worthy of clinical attention)-as adapted from the Diabetes Distress Screening Scale (DDSS) developed by Fisher et al.[23]

Statistical analysis

Data was analyzed using Epi-Info version 7.02. Mean and standard deviation were used for descriptive statistics. Univariate analysis was conducted using Student's t-test

and chi-square test to measure differences between means and proportions, respectively. Bivariate analysis was conducted using binary logistic regression to test association between socio-demographic characteristics, medical related characteristics (independent variables) and the dependent variable (perceived severity). For all inferential statistics, the level of significance was set at p-value=0.05.

RESULTS

Socio-demographic and medical-related characteristics

Table 1: Socio-demographic characteristics of participants.

Characteristics	Frequency n=119	Percentage (%)
Age		
30-39	11	9.2
40-49	21	17.7
50-59	30	25.2
60-69	42	35.3
≥ 70	15	12.6
Mean age		56.84±11.51
Sex		
Male	50	42.0
Female	69	58.0
Marital status		
Married	96	80.7
Widow/Widower	18	15.1
Single	4	3.4
Separated/Divorced	1	0.8
Type of Marriage (n=96)		
Monogamous	85	88.5
Polygamous	11	11.5
Educational Level		
None	6	5.0
Primary	26	21.9
Secondary	39	32.8
Tertiary	48	40.3
Employment Status		
Employed	51	42.9
Retired	35	29.4
Unemployed	33	27.7
Monthly income (₦)		
< 50,000	70	58.8
50,000-250,000	37	31.1
250,000-500,000	9	7.6
>500,000	3	2.5
Number of children		
Nil	2	8.4
1-2	23	19.3
3-4	27	22.7
5-6	35	29.4
≥ 7	24	20.2
Mean		4.92±2.84

The socio-demographic characteristics of participants are presented in Table 1. Mean age was 56.84±11.51 years, with the majority in 60-69 years age bracket (42, 35.3%); males were 50 (42.0%) and female, 69 (59.0%). Among the participants, 96 (80.7%) were married, with most (85/96, 88.5%) in monogamous marriage; only 4 participants (3.4%) were single. Nearly all had a form of education: 26 (21.9%), 39 (32.8%) and 48 (40.3%) had attained primary, secondary and tertiary levels of education respectively. Majority were currently employed (51, 42.9%), and earn less than N50,000 per month (70, 58.8%), the equivalent of $138.89 USD.

The mean duration of diabetes was 7.60±5.58 years; 40 (33.6%) of the participants had been diabetic for 4-6 years, 35 (29.4%) ≥10 years, and 3 (2.5%) for <1 year. Nearly half of the participants reported having hypertension as a co-morbidity (58, 48.7%), while 26 (21.9%) had no history of an associated condition. A little more than a tenth (16, 13.5%) consume alcohol, while most (101, 84.9%) reported that they received the support of family members.

Perceived severity of diabetes

The frequency counts of responses to the items investigated to measure the level of perceived severity of diabetes are displayed in Table 2. For all the items, except 1 and 4, the majority of the responses (59.7-95.8%) were negative, that is indicating a low perception of thus earning a zero or low score. For item 1, which is about presence of a symptom that the respondent perceived is related to the diabetes condition, one-third (32.8%) did not mention any of the listed symptoms. Similarly, for item 4, about one-third (37.8%) had not been referred for an eye problem.

The average of the scores assigned to the items, and the sum score are displayed in Table 3. Item 6 about presence of complications had the lowest mean score and standard deviation (0.04±0.2). The mean sum score for all the participants was 2.13±1.18. Virtually all the items were correlated with the sum score, each explaining some degree of the variance in the sum score (r^2), from 9% by item 6 on presenting with a complication to 40% by item on referral to an eye specialist.

When the responses were placed on our adapted Perceived Severity Scale (PSS), the results revealed that slightly over half participants (67, 56.3%) had an average total score <3 thus were categorized as having a low PSS. Conversely, the rest 52 (43.7%) had an average total score ≥3 thus were categorized as having a high PSS. However, the observed difference was not statistically significant (X^2=3.782, p=0.052).

Factors associated with perceived severity of diabetes

The association between selected socio-demographic characteristics (age, sex, marital status, employment

status, educational status, family support and income) and perceived severity were analyzed.

Table 2: Frequency distribution of responses to perceived severity scale.

Characteristics	Frequency n=119	Percentage (%)
Item 1: Presence of any symptom seen as part of the illness (n=141) (Multiple responses)		
Dizziness	45	31.9
Eye problem	1	0.7
Fatigue after exercise	44	31.2
Forgetfulness	34	24.1
Nausea	5	3.6
Numb feet	4	2.8
Pains	4	2.8
Purging	1	0.7
Swollen glands	2	1.4
Waist pain	1	0.71
Mention of any symptom seen as part of the illness (Grouped Responses) n=119		
Mentioned One -1	41	34.4
Mentioned Two or more -1	39	32.8
Mentioned None -0	39	32.8
Item 2: Presence of germ or virus caused by the illness		
Yes -1	13	10.9
No -0	106	89.1
Item 3: Do you think your diabetic condition is incurable		
Yes -1	48	40.3
No -0	68	57.2
Don't know -0	3	2.5
Item 4: Have you ever been referred to eye specialist		
Yes -1	74	62.2
No -0	45	37.8
Item 5: Ever had a wound refusing to heal		
Yes -1	23	19.3
No -0	96	80.7
Item 6: Presence of complications		
Bad health -1	1	0.8
Blindness -1	1	0.8
Blurred sight -1	2	1.7
Handicap -1	1	0.8
None -0	114	95.8
Item 7: Presence of other health problems		
Arthritis -1	1	0.8
Cataract -1	1	0.8
Eye defect -1	4	3.3
Glaucoma -1	1	0.8
Heart disease -1	6	5.0
None -0	108	89.3

Likewise, the association between a selection of medical-related characteristics and perceived severity was also analyzed using bivariate analysis. Each of the socio-demographic and medical-related characteristics were considered the independent variables and were dichotomized for logistic regression. The Odds Ratios and 95% Confidence Intervals including p-values for the regression coefficients are displayed in Table 4. However, none of the variables tested was showed association with perceived severity. It is noteworthy that the coefficients for sex, employment status, religion, duration of diabetes and presence of a co-morbidity were in the reverse (negative) direction.

DISCUSSION

The study was part of a larger study on the influences of diabetes self-management among patients receiving treatment at the medical outpatient clinic, specifically the Endocrinology Clinic at the University of Port Harcourt Teaching Hospital, Port Harcourt. The study examined the participants' perception of the level of severity of their diabetes using a 7-point scale (Perceived Severity Scale). The findings showed that the participants were somewhat split in halves on their perception of the severity of their diabetes: 47.9% had a low perceived severity while 52.1% had a high perceived severity of their condition. One of the only two studies we found on the perception of severity of diabetes in a Nigerian population was by Adejoh in which the health belief model was examined.[13] Adejoh had adopted a multidimensional tool developed by Given et al, that included questions on disease perception including severity, and found a comparably low and high disease perception of 53.9% and 46.1% respectively.[13,24] The other, an earlier study by Alogna reported a high perception of severity of diabetes especially in older patients.[23]

Most studies on perception of severity of diabetes explored the several dimensions of the health belief model, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, as they impinge on patients' health actions and behaviours including self-care activities.[12,13,15-18,24-26] This study is thus limited by investigating only perceived severity, although other researchers have as well examined sub-dimensions of the health belief model among diabetes patients.[27-29]

The variables relating to perception of severity of diabetes that the study measured showed acceptable interactions between the items and our composite measure of perceived severity. However, there is enough justification for a robust psychometric testing, clearer operational definition of perceived severity, and a graded scoring scale toward further development and adaptation of the study instrument.

Table 3: Mean item and sum scores for perceived severity scale (PSS) of diabetes.

Item	Total Score	Mean Score	SD	Correlation Coefficient*	P-value	r^2
Item 1: Presence of any symptom seen as part of the illness	80	0.67	0.47	1.522	<0.01	0.37
Item 2: Presence of germ or virus caused by the illness	13	0.11	0.31	0.636	0.07	0.03
Item 3: Do you think your diabetic condition is incurable	48	0.40	0.49	1.116	<0.01	0.22
Item 4: Have you ever been referred to eye specialist	74	0.62	0.49	1.525	<0.01	0.40
Item 5: Ever had a wound refusing to heal	23	0.19	0.40	1.029	<0.01	0.12
Item 6: Presence of complications	5	0.04	0.20	1.747	<0.01	0.09
Item 7: Presence of other health problems	10	0.08	0.28	1.500	<0.01	0.13
PSS Sum Score	253	2.13	1.18			

*Correlation with PSS sum score

Table 4: Bivariate logistic regressions of socio-demographic and medical-related variables with perceived severity.

Term	Odds Ratio	95% C.I.	Coefficient	P-value
Age group (<60/≥60 years)	1.83	0.83-4.05	0.60	0.14
Sex (male=0, female=1)	0.49	0.23-1.04	-0.71	0.06
Education (<tertiary=0, ≥tertiary=1)	1.13	0.54-2.36	0.12	0.75
Employment (employed=0, unemployed/retired=1)	0.92	0.44-1.92	-0.08	0.83
Income (Yes ≥$140, No <$140)	1.88	0.89-3.94	0.63	0.10
Marital status (married=0, unmarried=1)	1.34	0.54-3.34	0.29	0.53
Marriage type (polygamous/monogamous)	2.90	0.79-10.68	1.06	0.11
Children	1.09	0.95-1.25	0.08	0.23
Religion (Islam/Christianity)	0.43	0.04-4.25	-0.85	0.47
Alcohol (Yes/No)	1.09	0.38-3.14	0.08	0.88
Diabetes duration (≤ 5 years/> 5 years)	0.56	0.27-1.16	-0.59	0.12
Co-morbidity (Yes/No)	0.81	0.34-1.93	-0.22	0.63

In this study, there was no association found between the selected socio-demographic characteristics and medical-related factors with perceived severity of diabetes. It is difficult to be certain on why this was so. However, other studies have reported correlation between history of diabetes duration and perceived severity; also, men had a higher level of perceived severity than women.[15] Interestingly, even though not statistically significant, the direction of the observed relationship between some factors and perceived severity was negative. For instance, it appeared that an unemployed Christian female with over 5 years' history of diabetes and having no co-existing illness was likely to have a low perceived severity of diabetes. The main strength of this study is in providing rare information on a concept pertaining to one of the attitudinal undertones of the health behavior of diabetes patients seeking medical care in Nigeria.

CONCLUSION

In conclusion, patients seeking care for type 2 diabetes at the main referral hospital in Port Harcourt were split in almost equal halves on their perception of the level of severity of their illness. We sought to establish the underlying factors that influence how the perceive disease severity by examining a selection of socio-demographic and medical-related factors. Sex, employment status, religion, duration of diabetes and presence of a co-morbidity appeared to show an inverse relationship with perceived severity, however there was no valid association.

We recommend further studies to examine other components of the health belief model beyond perceived severity to enable better understanding of the underlying attitudinal influences on the health behavior of diabetes patients in our setting. This will help in informing tailored health promotion activities that will complement medical management and thereby improve clinical outcomes in diabetes in Port Harcourt, Nigeria.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the University of Port Harcourt Research Ethics and Committee (REF: UPH/CEREMAD/REC/04-15-05-2017)

REFERENCES

1. Danaei G, Finucane M, Lu Y, Singh G, Cowan M, Paciorek C, et al. National, regional, and global trends in fasting plasma glucose and diabetes prevalence since 1980: systematic analysis of health examination surveys and epidemiological studies with 370 country-years and 2.7 million participants. Lancet 2011; 378(9785):31-40.
2. World Health Organization. Global status report on Non Communicable diseases 2010. Geneva: World Health Organization; 2013.
3. Chinenye S, Young E. State of Diabetes Care in Nigeria: A Review. Niger Health J. 2011;11(4):101-6.
4. Ogbera AO, Ekpebegh C. Diabetes mellitus in Nigeria: The past, present and future. World J Diabetes. 2014;5(6):905-11.
5. Fasanmade OA, Dagogo-Jack S. Diabetes Care in Nigeria. Annals Global Health. 2015;81(6):821-9.
6. Chinenye S, Onyemelukwe GC, Johnson TO. Diabetes advocacy and care in Nigeria. Port Harcourt, Nigeria: Diabetes Association of Nigeria; 2014.
7. Nwafor A, Owhoji A. Prevalence of diabetes mellitus among Nigerians in Port Harcourt correlates with socio-economic status. J Appl Sci Environ Mgt. 2001;5(1):75-7.
8. Nyenwe EA, Odia OJ, Ihekwaba AE, Ojule A, Babatunde S. Type 2 diabetes in adult Nigerians: a study of its prevalence and risk factors in Port Harcourt, Nigeria. Diabetes Res Clin Pract. 2003;62(3):177-85.
9. Unachukwu C, Babatunde S, Ihekwaba AE. Diabetes, Hand and Foot Ulcers: a hospital-based cross-sectional study in Port Harcourt, Nigeria. Diabetes Res Clin Pract. 2007;75(2):148-52.
10. Wettlaufer A. In the mind's eye: the visual impulse in Diderot, Baudelaire and Ruskin. Amsterdam; New York: Rodopi; 2003:257.
11. Miles A. Perceived Severity. In: Gerrard M, McCaul K, Etcheverry PE, eds. Constructs and measures for health behavior. Rockville, USA: Division of Cancer Control and Population Sciences, National Cancer Institute, 2008. Available at: https://cancercontrol.cancer.gov/brp/research/constructs/perceived_severity.html. Accessed on 19 July 2017.
12. Skinner CS, Tiro J, Champion VL. The Health Belief Model. In: Glanz K, Rimer BK, Viswanath K, eds. Health Behavior and Health Education: Theory, Research, and Practice. San Francisco, CA: Jossey-Bass; 2008.
13. Adejoh SO. Diabetes knowledge, health belief, and diabetes management among the Igala, Nigeria. SAGE Open. 2014;4(2):1-8.
14. Park KA, Kim JG, Kim BW, Kam S, Kim KY, Ha SW, Hyun ST. Factors that affect medication adherence in elderly patients with Diabetes Mellitus. Korean Diabetes J. 2010;34(1):55-65.
15. Sharifabad MAM, Tonekaboni NR. Perceived severity and susceptibility of diabetes complications and its relation to self-care behaviors among diabetic patients. Armaghane Danesh. 2007;12(3):59-68.
16. Ayele K, Tesfa B, Abebe L, Tilahun T, Girma E. Self care behavior among patients with diabetes in Harari, Eastern Ethiopia: the health belief model perspective. PLoS ONE. 2012;7(4):e35515.
17. Daniel M, Messer LC. Perceptions of disease severity and barriers to self-care predict glycemic control in Aboriginal persons with type 2 diabetes mellitus. Chronic Dis Can. 2002;23(4):130-8.
18. Mayega RW, Etajak S, Rutebemberwa E, Tomson G, Kiguli J. Change means sacrificing a good life: perceptions about severity of type 2 diabetes and preventive lifestyles among people afflicted or at high risk of type 2 diabetes in Iganga Uganda. BMC Public Health. 2014;14:864.
19. Ogbera A, Adeyemi-Doro A. Emotional distress is associated with poor self care in type 2 diabetes mellitus. J Diabetes. 2011;3(4):348-52.
20. Agbir TM, Audu MD, Adebowale TO, Goar SG. Depression among medical outpatients with diabetes: A cross-sectional study at Jos University Teaching Hospital, Jos, Nigeria. Ann Afr Med. 2010;9(1):5-10.
21. Nkporbu AK, Stanley PC, Ohaeri J. Pattern and prevalence of psychiatric comorbidity in patients with essential hypertension in Port Harcourt, Nigeria. Am J Psychiatr Neurosci. 2016;4(1):5-12.
22. Alogna M. Perception of severity of disease and health locus of control in compliant and noncompliant diabetic patients. Diabetes Care. 1980;3(4):533-4.
23. Fisher L, Glasgow RE, Mullan JT, Skaff MM, Polonsky WH. Development of a Brief Diabetes Distress Screening Instrument. Ann Fam Med. 2008;6(3):246-52.
24. Given GW, Given BA, Gallin RS, Condon JW. Development of scales to measure beliefs of diabetic patients. Res Nurs Health. 198;6(3):127-41.
25. Tan MY. The relationship of heath beliefs and complication prevention behaviors of Chinese individuals with type 2 diabetes mellitus. Diabetes Res Clin Pract. 2004;66:71-7.
26. Kartal A1, Ozsoy SA. Validity and reliability study of the Turkish version of Health Belief Model Scale in diabetic patients. Int J Nurs Stud. 2007;44(8):1447-58.
27. Mohebi S, Azadbakht L, Feizi A, Sharifirad G, Kargar M. Structural role of perceived benefits and barriers to self-care in patients with diabetes. J Educ Health Promot. 2013;2:37.
28. Mollem ED, Snoek FJ, Heine RJ. Assessment of perceived barriers in self-care of insulin-requiring diabetic patients. Patient Educ Couns. 1996;29(3):277-81.
29. Nagelkerk J, Reick K, Meengs L. Perceived barriers and effective strategies to diabetes self management. J Adv Nurs. 2006;54:151-8.

Cite this article as: Onu R, Babatunde S. Perceived severity of diabetes and associated factors among patients attending a referral hospital in Port Harcourt, Nigeria. Int J Res Med Sci 2018;6:1856-61.