

Coping mechanisms among patients with diabetes mellitus (type 1 & 2) in University College Hospital, Ibadan, Nigeria

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ABSTRACT: Data on coping mechanism of patients with diabetes mellitus (type I and II) are important yet lacking in developing countries like Nigeria, and particularly in southwest Nigeria. Diabetes mellitus (DM), one of the leading Non-communicable Diseases (NCDs) has a major impact on both the diagnosed individual and the public health system, hence the present study. The study was aimed at investigating coping mechanism among patients with DM in University College Hospital (UCH), Ibadan. A cross sectional survey was used for the study. The study population were patients with DM (type1 & type 2) that have been diagnosed for not less than 3 months and are on admission in UCH or on follow up in outpatient clinic. A quantitative study of sample size of 76 patients was used. Male and female medical wards and outpatient clinic that have patients with DM were purposely selected for the study. Respondents who met the inclusion criteria for the study were drawn proportionately from the units using simple random sampling technique. Coping mechanism questionnaire was used for data collection. Data entry was done using statistical package for social sciences (SPSS) version 22 while hypotheses testing was done using chi-square and Fisher's exact test at statistically significant level of 0.05. Findings revealed a mean score for age of 58.3 years (± 9.62). Coping mechanism of respondents received an average overall mean score of 3.18, above the average mean score of 2.5 indicating coping mechanism to DM among respondents to be highly adequate with respondents reported no perceived barriers to effective coping. This study pointed out the various coping strategies of patients with DM (Type 1 & 2). Specifically, gender, religion and marital status influences coping strategies in patients with DM with no reported barriers to their effective coping with the disease.

Keywords: Coping mechanism, diabetes mellitus, perceived factors, University College Hospital.

INTRODUCTION

Diabetes mellitus (DM) is a group of metabolic disorders characterized by high blood glucose levels. DM is an important public health problem, one of four priority non-communicable diseases (NCDs) targeted for action by world leaders (Oguejiofor et al., 2014). People with DM have an increased risk of developing a number of serious life-threatening health problems resulting in higher medical

care costs, reduced quality of life and increased mortality (Baena-Dfez et al., 2016). As a leading NCDs, DM is a health condition or disease that is persistent or otherwise long-lasting in its effects or a disease that comes with time. The term 'chronic' is often applied when the course of the disease lasts for more than three months. Both the number of cases and the prevalence of DM have been steadily

increasing over the past few decades (Oguejiofor et al., 2014).

The global prevalence of diabetes, especially type 2 DM is rapidly growing over recent decades (Shaw et al., 2010; Guariguata et al., 2014). The pace at which diabetes prevalence change in many countries and regions has been boosted by rapid urbanization and dramatic changes towards sedentary lifestyle (Blas and Kuru, 2010). The International Diabetes Federation (IDF) estimated the global prevalence to be 285 million in 2009 (IDF, 2009), 366 million in 2011 (IDF, 2011), 382 million in 2013 (IDF, 2013) and 415 million in 2015 (IDF, 2015). It was estimated that in 2017 there were 451 million (age 18–99 years) people with diabetes worldwide. These figures were expected to increase to 693 million by 2045. Of the 451 million people living with DM as at 2017, almost half (49.7%) were undiagnosed. Moreover, there was an estimated 374 million people with impaired glucose tolerance (IGT) and it was projected that almost 21.3 million live births to women were affected by some form of hyperglycemia in pregnancy. In 2017, approximately 5 million deaths worldwide were attributable to diabetes in the 20–99 years age range. The global healthcare expenditure on people with diabetes was estimated to be USD 850 billion in 2017 (Cho et al., 2018).

For long, Africa was considered safe from many of the “so-called diseases of affluence” plaguing the Western World, especially diabetes mellitus (DM). Approximately 7.1 million Africans by the year 2000 were reported to be suffering from DM with the figure expected to rise further to 18.6 million by 2030 (Wild et al., 2004) cited in (Oguejiofor et al., 2014). Majority (70 - 90%) of African diabetic is of type 2 (Mafunda et al., 2006; Levit, 2008 as cited in Oguejiofor et al., 2014) and is more prevalent among the wealthy, hence the tag “disease of opulence”. It is more pronounced in urban areas where people tend to be less physically active, eat diets rich in saturated fat and refined sugars and are more obese. Nigeria, as the most populated country in Africa and black Nation in the world was estimated to have 3.1 million people with DM (Osibogun, 2012). IDF 2010 reported a prevalence estimate of 3.9% for Nigeria (IDF, 2010) and the current prevalence of 4.9% is more than double the previous national prevalence of 2.2% (IDF, 2010).

The presence of DM has a major impact on both the diagnosed individual and the public health system (Albai et al., 2017). Patients with DM have decreased quality of life (Timar et al., 2016) mediated especially by the presence of acute and chronic DM complications. The impact on society and on public health systems of DM is emphasized by the high direct (especially related to DM treatment or hospitalization) or indirect (related to the patient's permanent/temporary incapacity to work or reduced productivity due to DM acute and chronic complications and decreased life expectancy) costs.

The complications of DM and thus associated disease burden may be avoided by obtaining optimal glycemic control during the patient's lifetime leading to improved

quality of life (QOL). It has been demonstrated that optimal DM global management may only be achieved by implementing lifestyle-optimization measures and adequate pharmacological treatment (American Diabetes Association (ADA), 2017). As DM is a chronic, lifelong disease, paramount in its global management are diabetes-related self-care activities, which in fact are all the measures taken by the patient at home to control the disease and include but are not limited to taking prescribed medication, adhering to an adequate diet, physical exercise, proactive screening of diabetes complications, and glycemic self-measurement (ADA, 2017).

Most patients with chronic disease lose confidence in their ability to function in their social network. Therefore, they need relevant coping strategies to help them deal with daily life (Aldmin, 1994 cited in Nilsson et al., 2017). The DM regimen involves numerous daily behavioral tasks, as well as changes in such basic habits as diet and exercise, all of which must be done for the rest of the patient's life.

The resultant disruption in health as a result of chronic diseases such as DM is a continual source of stress, which, in addition to everyday stressors, must be managed if people with diabetes are to be positively adjusted to the disease. Although many people with diabetes seem to succeed in integrating the demands of the disease into their daily lives, diabetes may involve a lot of stress for the individual. Consequently, people with diabetes are continuously challenged to cope with multifaceted problems.

According to Lazarus and Folkman (1984) as cited in Nilsson et al. (2017), coping is a complex process, whereby individuals' perception of stress reflects the relationship between their experiences in their environment and their available resources. In their view, perceived stressful events, such as diabetes, require emotion-focused coping to regulate emotions or problem-focused coping to deal with the problem causing the distress. Coping may be characterized by cognitive or behavioral attempts either to avoid a stressful situation or to actively do something to alter the situation (Billings and Moos, 1981 cited in Karlsen and Bru, 2012). The habitual way in which people cope with stressing situations they encounter is the individual's coping disposition or style (Carver et al., 1989; Karlsen and Bru, 2012).

People with diabetes tend to use a variety of styles in order to cope with the stressing demands of the disease. Coping styles, with regard to this study, refer to habitual coping when dealing with diabetes-related strains. There is no clear consensus as to which coping styles or modes of coping are most effective. Concerning diabetes, problem-focused coping, such as problem-solving action, logical analysis, seeking social support and information gathering, may be particularly important in order to achieve metabolic control and thus prevent diabetes-related problems such as hypoglycaemic episodes and long-term complications (Cox and Gonder-Frederick, 1992; Karlsen and Bru, 2012).

Coping affect diseases from childhood to adulthood.

Selecting a strategy can affect the consequence of QOL which can be positive or negative (Sigstad et al., 2005 cited in Ekpenyong et al., 2012).

Many developed nations have focused considerable efforts on addressing the burden of DM. In contrast, the rising burden of chronic NCDs like DM in developing countries like Nigeria receives inadequate attention and efforts. In developed countries, to reduce the major NCDs, focus is directed at preventing and controlling the risk factors in an integrated manner. Presently, less than half of the 160 responding countries reported having NCD policies from which only one-third to one-half reported having CVD, tobacco, diabetes, and cancer plans. Nigeria is one of the member states without NCD unit in its Ministry of Health and does not have specific NCDs budget (Megari, 2013).

Considering the practical importance of coping strategies on QOL among diabetic patients, impact of socio-demographics on coping mechanism; the inadequate attention diabetes is receiving in Nigeria as well as the dearth of literatures regarding coping mechanism among diabetes patients in Nigeria and especially Western Nigeria, the present study was conducted to assess the coping mechanisms among patients with diabetes (type 1 & type 2) in male and female medical wards and diabetic outpatient clinic of University College Hospital, Ibadan.

MATERIALS AND METHODS

Setting and sampling

University College Hospital (UCH), Ibadan is located in Ibadan, Oyo State. A cross sectional descriptive design was used for this study. A sample size of 76 patients from the estimated number of 95 patients receiving out-patient services in outpatient clinic and those on admission in female and male medical wards (outpatient clinic:40; male medical ward:28; female medical ward:27 for the months of September, November and December) was used. This was calculated using Krejcie and Morgan (1970) formula for sample size.

A multistage sampling technique was used in drawing respondents for the study. To select a representative sample size from each of the clinic and wards, a proportionate sampling technique was done using the following formula:

$$R = \frac{N_s \times n}{N}$$

Where: n = total sample size; N_s = number of diabetic patients in a particular clinic/wards; N = total number of diabetic patients and R = require sample size.

Instrument for data collection

The instrument for data collection from individuals who met

the inclusion criteria is coping mechanism questionnaire. Section A comprised of the biographic data of the respondents; Section B are adopted Coping Styles Inventory (Karlsen and Bru, 2012) which is a synthesis of Diabetes Coping Measure (DCM; Welch, 1994), Cope dispositional coping style scale (COPE; Carver et al., 1989), and Ways of Coping Questionnaire (Folkman and Lazarus, 1988). The CSI comprised of 38 4-point likert scale test items measured under 8 variables: Seeking social support, integration, denial/mental derangement, seeking knowledge, resignation, planning, tackling spirit and self-blame. Section C comprised of perceived factors influencing coping among respondents.

In data analysis, a scale of 1-4 was used to measure the respondents' level of coping; a score below 2.5 is regarded as inadequate coping while a score above 2.5 would be regarded as adequate coping. For factors affecting coping mechanisms: a score above mean score of 1.0 is regarded as having an influence on the coping mechanism of the respondents while a score below 1.0 is regarded otherwise.

Data collection procedure

A letter of introduction was collected from the University College Hospital, Ibadan so as to gain permission for data collection from the hospital authority. Informed consent was obtained from the participants. The questionnaire was administered to respondents on face-to-face contact.

Data management and analysis

Data entry was done using statistical package for social sciences (SPSS) version 22. Data were summarized and presented using descriptive statistics of frequencies, percentages. Statistical significance was considered at p value of < 0.05.

Ethical consideration

The research proposal was submitted to the ethical review committee of the University of Ibadan and University College Hospital, Ibadan, for approval to conduct the study. A written approval to proceed for the study was obtained from the committee, a copy of the proposal and letter of introduction submitted to the Chief Medical Director of University College Hospital, Ibadan and a letter of permission to conduct the study in the unit(s) and ward(s) was given.

The study participants were engaged in the study through a verbal informed consent that was obtained from them and they were requested to participate voluntarily. The purpose of the study was explained to the participant and they were told of the right to withdraw from the study any time they so wish.

RESULTS

All of the 76 respondents accepted to participate in the study. Out of the 76 questionnaires administered, 75 questionnaires were returned of which three were incompletely filled and were thus excluded from the final analysis. Therefore, 72 respondents are included in this study.

Table 1 shows those between the ages of 65-69 accounted for the majority (19.4%, n=14) closely followed by those between the ages of 45-49, 50-54, 60-64 who accounted for 12 (16.7%) each. The average mean score (Grand Mean) for age is 58.3 years. Distribution of respondents based on gender was truly heterogeneous as males accounted for 37 (51.4%) while females accounted for 35 (48.6%). Respondents' level of education revealed those in the tertiary level are in the majority (55.6%, n=55) while those in secondary level accounted for 32 (44.4%). Religion distribution of respondents indicated those in Christian faith accounting for the majority (40.3%, n=29) closely followed by traditional worshippers (31.9%, n=23) then those in Islam (27.8%, n=20). Marital status of respondents showed those married in the majority (50%, n=36), followed by those widowed (33.3%, n=24) while singles and those separated accounted for 6 (8.3%) each.

Table 2 is a 4-point Likert scale with an average score of 2.5 (very seldom (VS)=1, seldom(S)=2, occasional (O)=3, frequent (F)=4; average score = $1+2+3+4/4 = 2.5$). Therefore, any score above the average score of 2.5 is regarded as adequate coping mechanism while a score below 2.5 is regarded as inadequate coping.

Table 2 shows statements on these 4 positive dimensions-seeking social support, seeking knowledge, planning and tackling spirit-to coping mechanism receiving mean scores greater than 2.5, indicating a high level of agreement. Seeking social support dimension revealed almost all (91.7%, n=66) of study respondents occasionally would want to talk to someone about how they feel, 48 (66.7%), 18(25%) indicated 'I discuss my feelings with someone' occasionally and frequently respectively. On "I talk to someone to find out more about the situation", 36 (50%) occasionally do so while 18(25%) do that frequently. Majority (58.3%, n=42) occasionally talk to someone who could do something concrete about DM while 18(25%) frequently do so. Statements on seeking knowledge dimension has almost all (83.3%, n=60) respondents indicated "I am actively seeking information about how I can avoid complications" occasionally while majority (75%, n=54) of respondents occasionally seek knowledge about how they can best live with DM as well as being active in asking DM-related advice and counseling at consultation with doctor/nurse respectively. 36 (50%), 30(41.7%) occasionally and frequently respectively indicated "prior to consultations with doctor/nurse, I have prepared a number of questions I seek answers to". Planning dimension to coping with DM has more than half (75%, n=54), (83.3%, n=60) of the respondents respectively indicated that they

Table 1. Socio-demographic data.

Items	Frequency	Percentage
Age		
40-44	6	8.3
45-49	12	16.7
50-54	12	16.7
55-59	5	6.9
60-64	12	16.7
65-69	14	19.4
70-74	11	15.3
Mean±SD	58.3 ± 9.62	
Gender		
Male	37	51.4
Female	35	48.6
Total	72	100
Educational qualification		
Secondary	32	44.4
Tertiary	40	55.6
Total	72	100
Religion		
Islam	20	27.8
Christianity	29	40.3
Traditional	23	31.9
Total	72	100
Marital status		
Single	6	8.3
Married	36	50.0
Widowed	24	33.3
Separated	6	8.3
Total	72	100.0

occasionally try to come up with a strategy about what to do as well as make a plan of action while 42(58.3%), 18(25%) occasionally and frequently respectively think about how they might handle the problem. Tackling spirit of respondents revealed more than half (83.3%, n=60) indicated "I believe that research will develop a cure for diabetes before long" while 42 (58.3%), 30 (41.7%) would occasionally and frequently respectively believe that clinical research is continually improving treatments available for DM.

The remaining 4 dimensions of integration, denial/mental derangement, resignation and self-blame have negative statements to DM coping strategies hence the grading of the variables was reversed with very seldom receiving the highest value of 4, seldom, 3; occasional, 2; frequent, 1. All the statements received mean scores greater than the average score of 2.50 indicating disagreement. Integration dimension has majority (58.3%, n=42) of respondents seldom believe that having DM over a long time changes

Table 2. Distribution of respondents based on coping mechanism to DM.

Items	Very seldom	Seldom	Occasional	Frequent	M±SD
Seeking social support					
I talk to someone about how I feel	-	6(8.3%)	66(91.7%)	-	2.92±0.28
I discuss my feelings with someone	-	6(8.3%)	48(66.7%)	18(25.0%)	3.17± 0.55
I talk to someone to find out more about the situation	-	18(25.0%)	36(50.0%)	18(25.0%)	3.00 ± 0.71
I talk to someone who could do something concrete about the problem	6(8.3%)	6(8.3%)	42(58.3%)	18(25.0%)	3.00±0.82
Integration					
Having diabetes over a long time changes your outlook on life for the worse	-	42(58.3%)	18(25.0%)	12(16.7%)	2.58±0.76
Diabetes is the worst thing that has ever happened to me	30(41.7%)	30(41.7%)	12(16.7%)	-	3.25±0.45
Most people would find it difficult to adjust to diabetes	6(8.3%)	60(83.3%)	6(8.3%)	-	3.00±0.41
Diabetes makes me feel different from everyone else	54(75.0%)	12(16.7%)	6(8.3%)	-	3.60±0.63
Because of my illness, I cannot plan realistically for the future	54(75.0%)	6(8.3%)	12(16.7%)	-	3.50±0.76
Whatever I do, diabetes complications will continue to ruin my health	24(33.3%)	42(58.3%)	6(8.3%)	-	3.25±0.60
Denial/mental derangement					
I refuse to believe that it has happened	42(58.3%)	24(33.3%)	6(8.3%)	-	3.50±0.65
I pretend that it has not really happened	30(41.7%)	30(41.7%)	12(16.7%)	-	3.25±0.73
I say to myself "this is not real"	36(50.0%)	18(25.0%)	18(25.0%)	-	3.25±0.83
I turn to work or other substitute activities to take my mind off things	18(25.0%)	30(41.7%)	18(25.0%)	6(8.3%)	2.80±0.90
Seeking knowledge					
I am actively seeking information about how I can avoid complications	-	12(16.7%)	60(83.3%)	-	2.83±0.38
I am seeking knowledge about how I can best live with diabetes	-	6(8.3%)	54(75.0%)	12(16.7%)	3.03±0.50
At consultation with Doctor/ Nurse, I am active in asking diabetes-related advice and counseling	-	-	54(75.0%)	18(25.0%)	3.25±0.44
Prior to consultations with Doctor/Nurse, I have prepared a number of questions I seek the answers to	-	6(8.3%)	36(50.0%)	30(41.7%)	3.33±0.63
Resignation					
I always seem to have poor blood sugar no matter what I do	48(66.7%)	18(25.0%)	6(8.3%)	-	3.50±0.64
I am reluctant to visit my doctor for my regular diabetes checkup when I know I am in poor blood glucose control	30(41.7%)	42(58.3%)	-	-	3.42±0.50
There is little I can do to control my blood glucose well	36(50.0%)	36(50.0%)	-	-	3.50±0.50
Planning					
I try to come up with a strategy about what to do	6(8.3%)	12(16.7%)	54(75.0%)	-	2.67±0.63
I make a plan of action	6(8.3%)	-	60(83.3%)	6(8.3%)	2.92±0.64
I think about how I might best handle the problem	-	12(16.7%)	42(58.3%)	18(25.0%)	3.08±0.64
Tackling spirit					
I believe that research will develop a cure for diabetes before long	-	6(8.3%)	60(83.3%)	6(8.3%)	3.00±0.41
Clinical research is continually improving treatments available for diabetes	-	-	42(58.3%)	30(41.7%)	3.42±0.50

Table 2. Contd.

Items	Very seldom	Seldom	Occasional	Frequent	M±SD
Self-Blame					
I blame myself	54(75.0%)	12(16.7)	6(8.3%)	-	3.58±0.63
I am criticizing myself	48(66.7%)	24(33.3%)	-	-	3.39±0.47
Grand mean					3.18±0.47

Table 3. Perceived barriers to healthy coping in DM care.

Items	Yes	No	Don't know	M±SD
Family stress	54(75.0%)	18(25.0%)	-	1.75±0.43
Depression	48(66.7%)	24(33.3%)	-	1.67±0.47
Stressful life events	12(16.6)	60(83.3%)	-	0.97±0.38
Low social support	6(8.3%)	66(91.7%)	-	0.98±0.28
Poor prioritization skills	-	66(91.7%)	6(8.3%)	0.92±0.28
Low problem solving ability	6(8.3%)	60(83.3%)	6(8.3%)	0.90±0.41
compounding health problem	-	60(83.3%)	12(16.6%)	0.83±0.38
Low health literacy	-	54(75.0%)	18(25.0%)	0.75±0.44
Low financial resources	-	60(83.3%)	12(16.6%)	0.83±0.38
lack of access to providers and Diabetes educators	6(8.3%)	48(66.7%)	18(25.0%)	0.83±0.56
External focus (taking care of others)	6(8.3%)	48(66.7%)	18(25.0%)	0.83±0.56
Low educational level	6(8.3%)	60(83.3%)	6(8.3%)	0.91±0.30
Grand Mean				0.96±0.36

your outlook on life for the worse, 30(41.7%) indicated very seldom and seldom respectively to the statement “diabetes is the worst thing that has ever happened to me” while almost all (75%, n=54) respondents indicated very seldom to the statement “diabetes makes me feel different from everyone else” and “because of my illness, I cannot plan realistically for the future” respectively. 42 (58.3%), 24 (33.3%) respondents indicated very seldom and seldom respectively to the statement “whatever I do, diabetes complications will continue to ruin my health”. Responses to denial/mental derangement statements has the statement “I refuse to believe that it has happened” receiving 42 (58.3%), 24 (33.3%) respondents who indicated very seldom and seldom respectively while 30 (41.7%) indicated very seldom and seldom respectively to the statement “I pretend that it has not really happened”. Half (50%, n=36) of the respondents would very seldom want to say to themselves “this is not real” while 30 (41.7%), 18 (25%) would indicate seldom and very seldom respectively to the statement “I turn to work or other substitute activities to take my mind off things”. Dimension of resignation has more than half (66.7%, n=48) indicated that they very seldom seem to have poor blood sugar no matter what they do, 42 (58.3%), 30 (41.7%) seldom and very seldom respectively feel reluctant to visit doctor for diabetes checkup while 36 (50%) very seldom and seldom respectively feel there is little they can do to control their blood glucose well. Self-blame dimension received 54(75%) respondents who indicated “very seldom” to the

statement “I blame myself” while statement “I am criticizing myself” received 48 (66.7%), 24 (33.3%) respondents who indicated ‘very seldom’ and “seldom” respectively.

Table 2 shows an average overall mean score (Grand mean) of 3.18, significantly above the average mean score of 2.5 indicating coping mechanism to diabetes mellitus among studied respondents to be highly adequate.

Table 3 is a 3-point Likert scale with an average score of 1.0 (Do not Know=0, No=1, Yes=2; average score = $0+1+2/3 = 1.0$). Therefore, any score above the average score of 1.0 is regarded as barrier to coping in DM care while a score below 1.0 is regarded not a barrier.

Barriers such as family stress, depression received 50(75%) and 48(66.7%) respondents respectively who indicated “Yes” while the rest of items-low social support, poor prioritization skills, low problem solving ability, compounding health problem, low health literacy, low financial resources, lack of access to providers and diabetes educators, external focus (taking care of others) and low educational level received more than half of the respondents who indicated “No” with 18(25%) respondents indicating “Do not know” against lack of access to providers and diabetes educators, and external focus (taking care of others) respectively.

Table 3 also shows an average overall mean score (grand mean) of 0.96, below the average mean score of 1.0 indicating all the stated factors are considered not barriers to effective coping in DM care by the study respondents.

The chi-square Table 4 indicates gender, religion and

Table 4. Chi-square test of association between gender, marital status, educational status and coping mechanism.

Variable	Inadequate coping mechanism	Adequate coping mechanism	Total	Df	X ²	P- value
Gender						
Male	28	9	37			
Female	24	11	35	1	0.45	0.50
Total	52	20	72			
Religion						
Islam	12	8	20			
Christianity	24	5	29	2	3.18	0.20
Traditional	16	7	23			
Total	52	20	72			
Level of education						
Secondary	15	17	32			
Tertiary	37	3	40	1	18.45	*0.00
Total	52	20	72			
Marital status						
Single	6	0	6			
married	24	12	36			
widowed	16	8	24	3	4.89	*0.16
Separated	6	0	6			
Total	52	20	72			

*Given the result of the Chi-square test, it was observed that 4 cells (50%) have expected count less than 5. The minimum expected count is 2.3, hence Fisher exact was used to calculate the chi-square for level of education and marital status.

marital status having p-values greater than level of significance (0.05) hence there is significant statistical relationship of these variables with level of coping mechanisms in the respondents. However, level of education received a p-value less than level of significance revealing no significant statistical relationship with the level of coping mechanism in the respondents. Specifically, findings revealed gender, religion and marital status influence coping strategies in patients with DM.

DISCUSSION

In this study, the individuals' ages ranged from 40 to 75 years, with an overall mean of 58.3 years (± 9.62). The frequency of respondents (19.4%, n=14) was higher in the age group of 65-69 years and (16.7%, n=12) in the age groups of 45-49, 50-54, 60-64 years respectively, reflecting the characteristics of patients with DM attending outpatient diabetic unit and those on admission in female and male medical wards of UCH as patients with a longer time of disease evolution. This finding is in line with the data obtained by Jorgetto and Franco (2018) when evaluating the quality of living of individuals with diabetes mellitus through the use of Whoqol-100 which revealed frequency of study respondents being higher in those between the ages of 60-69 and 70-79 years with the mean age of 61

years (± 11). The heterogenous nature of the study in terms of gender differs with that of Bernini et al. (2017), a study that assessed the impact of diabetes mellitus on quality of life where women lead the numbers of diabetic cases.

Study findings in regards to coping mechanism shows a cumulative mean from all the domains to be 3.18 (± 0.11) indicating adequate coping strategies by the patients. Positive domains of coping-tackling spirit, seeking social support and seeking knowledge all received a sub cumulative means of above 3.0 each while planning-focused coping received 2.87. Similar study by Albai et al. (2017) that aimed to explore the possible relationship between the dominance of one of the four major coping styles and adherence to diabetes-related self-care activities (DRSCAs) in the population of patients with type 2 DM (T2DM), revealed 45 patients (35.7%) had problem-focused coping, 37(29.4%) had emotion-focused coping, 32(25.4%) social support-focused coping, and 12(9.5%) had avoidance-focused coping. Patients with emotion-focused coping had the highest level (p=0.02) of DRSCA (median 44 points), followed by patients with social support-focused coping (median 40 points) and problem-focused coping (median 36 points), while patients with avoidance-focused coping had the lowest SDSCA total score (33 points). The study concluded that type of dominant coping mechanism has a significant impact on the quality of the DRSCA measures implemented by the patient to manage

their diabetes as it revealed patients with emotion-focused and social support-focused coping styles tend to have significantly increased adherence to DRSCA scores, while patients with other dominant coping styles are less interested in managing their disease. Similarly, in a study that identified and compared different coping styles among adults with Type 1 and Type 2 diabetes (Karlsen and Bru, 2013), a clear majority of the respondents reported to integrate their diabetes with only a small minority responded to diabetes related problems by denial and/or mental disengagement and resignation. The study concluded that the differences found between types of diabetes and coping were mainly related to higher age and lower educational level among people with Type 2 diabetes.

The most important factors that affect coping in patients with DM are age (Karlsen and Bru, 2013), sedentary lifestyle and obesity (Silva, 2017). Depression and family stress were individually considered barriers to effective coping by the present study respondents, however, an overall mean score (grand mean) of 0.96, below the average mean score of 1.0 indicated all the stated factors are considered not barriers to effective coping in DM care by the study respondents.

Variables such as gender, religion and marital status associate with coping strategies in patients with DM in the study setting in contrast to a study by Karlsen and Ebru (2013) that reported a dimension of coping-self-blame correlating significantly with both the active and passive coping styles.

Conclusion

This study contributed to point out the various coping strategies of patients with DM (Type 1&2), and perceived factors that could serve as barriers to effective coping among DM patients in the study setting. With this study, it can be concluded that gender, religion and marital status influences coping strategies in patients with DM with respondents reporting no barriers to their effective coping with the disease.

It is recommended that further studies be done in relation to coping mechanism and QOL among patients with diabetes (DM 1&2) with an attempt to associate or correlate the variables of coping mechanism and QOL in order to make more evident the fact that coping mechanism is a process while QOL a product since there is still dearth of literature in this regard.

CONFLICT OF INTERESTS

The authors declare no conflict of interest in this article.

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