Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 9, Issue, 10, pp.60155-60159, October, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

PREVALENCE OF DEPRESSION, ANXIETY, AND STRESS (DAS) AMONG THE DIABETIC FOOT ULCER (DFU) CLIENTS

***,[1]Dr. R. Shankar Shanmugam, [2]Dr. P. Nellaiappar, [3]Dr. E. Prabhu and [4]Mangalam, S.**

[1]Coordinator-Nursing Education & PME/Sr.Nursing Tutor, Tamilnadu Govt Multi Super Speciality Hospital, Omandurar Govt Estate, Chennai-2
[2]Dept of Hand & Reconstructive Surgery, Tamilnadu Govt Multi Super Speciality Hospital, Omandurar Govt Estate, Chennai-2
[3]Institute of Nuclear & Molecular Medicine, Tamilnadu Govt Multi Super Speciality Hospital, Omandurar Govt Estate, Chennai-2
[4]Academic Officer /Nursing Tutor, Tamilnadu Govt Multi Super Speciality Hospital, Omandurar Govt Estate, Chennai-2

ARTICLE INFO

Article History:
Received 17th July, 2017
Received in revised form
08th August, 2017
Accepted 29th September, 2017
Published online 31st October, 2017

Key words:
Diabetes, Diabetic Foot Ulcer, Depression, Anxiety and Stress.

ABSTRACT

The prevalence of diabetes is increasing and also the cost of managing its co-morbidities. Diabetic Foot Ulcer (DFU) is a devastating complication of diabetes. Patients who have diabetes and a co-morbid psychiatric disorder are at increased risk of poor management and treatment outcomes than those without a psychiatric disorder.

Methods: A descriptive Cross sectional study was carried out to find out prevalence of DAS symptoms among diabetes foot ulcer clients attending HRM (Hand & Reconstructive Microsurgery) Clinic.

Results: There was a high level of mental health problems (DAS) found among DFUs clients.

Conclusion: The study results highlighted the importance of assessing and treating DAS symptoms as part of a comprehensive management plan for diabetes and to have positive productive life.

Citation: Dr. R. Shankar Shanmugam, Dr. P. Nellaiappar, Dr. E. Prabhu and Mangalam, S. 2017. "Prevalence of Depression, Anxiety, and Stress (DAS) among the Diabetic Foot Ulcer (DFU) clients", *International Journal of Current Research*, 9, (10), 60155-60159.

INTRODUCTION

Diabetes is a life style disease of the 21 st century, contributing to this includes changes in diet, adoption of sedentary lifestyles, and the consequent increase in rates of obesity. These changes are primarily due to rapid economic development and affluence. Regardless of the increasing awareness of diabetes, it continues to represent both a national and global health challenge. WHO (2012) declared that, diabetes was the direct cause of 1.5 million deaths and increased blood glucose was the cause of another 2.2 million deaths. It was estimated that approximately 366 million people were diagnosed with diabetes worldwide in 2011 and India has 61.3 % diabetics and projected to cross 100 million by 2030. Despite improvement in treatments for patients with diabetes DUFs and their complications leads to a significant level of disability and place a considerable cost burden on the health system (Wilds *et al*., 2004). Diabetic foot complications are the most common reason for diabetic hospital admissions with 12-25% of patients with diabetes developing a diabetic foot ulcer. Diabetic patients with Depression, Anxiety and Stress (DAS) are also less likely to adhere to medical treatment (Lin and and Kroenke, 2007) and more likely to have higher health care use and expenditures than diabetic patients without depression. In a meta analysis of 39 studies, Anderson *et al* found that patients with either Type I or Type II diabetes had twice the likelihood of experiencing depression (11 % and 31 % for major depression and elevated depression symptoms respectively) than a matched group of non-diabetic individuals with the effect generalizing across community and clinical settings. Depression is frequently linked to diabetic complications. The relationship between depression and diabetes is well-established where as it is less established in case of diabetic foot ulcer. The literature on mental health in diabetes focuses on depression and only limited data is available on anxiety, stress levels and risks.

Corresponding author:* **Dr. R. Shankar Shanmugam,
Coordinator-Nursing Education & PME/Sr.Nursing Tutor, Tamilnadu Govt Multi Super Speciality Hospital,

Background and need for the study

Diabetes has been associated with an increased risk of certain Psychiatric disorders, particularly depression and anxiety disorders. Diabetes patients and their co–morbid psychiatric diseases are at increased risk of poorer management and treatment outcomes than those without a psychiatric Disorder. Diabetic patients with DAS are also less likely to adhere to medical treatment and more likely to have higher health care use and expenditures than diabetic patients without depression. Depression has been associated with hyperglycaemia and an increased risk for diabetic complications and coronary heart disease. High economic and social burden are associated with Diabetic foot (DF). The lifetime risk of developing a foot ulcer in a patient with diabetes ranges from 15% to 25%. Approximately 8% of diabetic Medicare beneficiaries have a foot ulcer and 1.8% have an amputation. The World Health Organization emphasizes the significance of the relationship between mental and physical health. In the Survey, WHO concluded that depression produces the greatest detriment in health compared with common chronic diseases such as angina, arthritis, asthma and diabetes.

WHO also reported that the co morbidity of depression with a chronic illness incrementally worsens the health outcomes in comparison to depression alone, any chronic disease alone or any combination of chronic diseases in the absence of depression. Depression was the most common disorder (16.9 % of diabetic patients). this was followed by mixed anxiety and depressive disorder (9.9%) and generalized anxiety disorder (7.0%). In a study of diabetes and anxiety in American adults, Barker *et al* reported that the overall age-adjusted prevalence of lifetime diagnosis of anxiety was 19.5% for people with diabetes and 10.9 % for those without diabetes. People with diabetes had a 20% higher prevalence of life time diagnosis of anxiety than those without diabetes. In a study of primary care diabetic patients in Al-Ain, united Arab Emirates, it was found that 33.8% of diabetic patients had psychiatric co-morbidity.it is well recognized that many individuals with chronic illness also have co-morbid unrecognized mental health disorders. There was 54 % greater mortality in patients with diabetics and depression than the non-diabetic ones. Statistical comparisons with findings from a study which used the HADS in a large sample of diabetes patients (with and without complications) again support the view that diabetes patients with Charcot foot are at a considerably increased risk of anxiety and depression. The prevalence of Diabetes is increasing as is the cost of managing its co morbidities. People with diabetes had a 20% higher prevalence of lifetime diagnosis of anxiety than those without diabetes[8].The prevalence of Diabetic foot ulcer among Outpatient and inpatient diabetics in Rural India was about 10.4. According to the Malaysian National Health and Morbidity Survey III (MNHMS), the prevalence of diabetes mellitus among individuals aged 18 years or more has increased from 11.6 % in 2006 to 15 .2 % in 2011.Diabetes mellitus and depression are recognised as two of the most important public health issues globally. Depression caused by psychological stress has an indirect impact on the delay in wound healing processes by affecting the patient's behaviour and quality of life .Long-term stress can delay wound healing in chronic wounds. Social isolation and fear of amputation lead to the development of psychological stressors. A high level of anxiety and depression scores hampers the diabetic foot ulcer wound healing process. In most of the DFU population, DAS remains unrecognised and undertreated.

Statement of problem

"A study to assess the level of Depression, Anxiety, and Stress (DAS) among the Diabetic Foot Ulcer (DFU) clients attending Tertiary care setting".

Objectives

1. To assess the level of Depression, Anxiety and Stress (DAS) among the Diabetic Foot Ulcer (DFU) clients.
2. To associate selected demographic variables with Depression, Anxiety, and Stress (DAS) among the Diabetic Foot Ulcer (DFU) clients.

Methodology

A descriptive – Cross sectional study was carried out through structured interview method. A group of 90 patients with a diagnosis of Diabetic Foot Ulcer (DFUs) were selected from Hand and Reconstructive Micro surgery department in a Tertiary care Hospital, Chennai. All the patients were selected from the outpatient department. Data were collected from the patients in two sections viz., Socio-demographic details and Depression, Anxiety, Stress Scale (DASS). Diabetes related information and demographic details were provided by the patients on a self-designed recording sheet. Selection of samples was done by using convenient sampling method and based on inclusion and exclusion criteria.

Inclusion criteria

1. Patient should be a confirmed case of DFU.
2. Can able to read and write Tamil & English.
3. Willing to participate in the study.

Exclusion Criteria

1. Not able to read and write in Tamil and English,
2. Not willing to participate.
3. Patients currently receiving psychoactive drugs or psychiatric treatment.

A non-probability convenient sampling technique was used to collect the data. Data were initially analysed using standard classifications: the DASS 21 scores were interpreted as Minimum score = 0, Maximum score =3, total score = 63, and categorised into three groups: scores 0-21 "mild", 22-42 "moderate" and scores of 43-63 as "severe risk" of anxiety , depression or stress. In addition, anxiety and depression scores were dichotomised using the following cut points: a score between 0 and 7 was classed as normal and a score between 8 – 21 points as increased risk.

Data collection procedure

Necessary permission was obtained for conducting the study. After getting informed consent, the data was collected from the

participants through structured questionnaire method (DASS 21). The collected data were analyzed by using descriptive and inferential statistics.(SPSS package)

Statistical analysis

Data were checked and analysed using Microsoft Excel and SPSS V20. Frequencies and percentages for categorical variables were calculated. Means and standard deviations (mean ± SD) are reported for scaled data, but where the focus is on differences or the comparison with reference data (see below) we used 95% confidence intervals. Pearson chi-square test was used to measure the association between the variables in the study. Normality assumptions for the DASS scales were not violated (Kolmogorov-Smirnov test p-values >0.10). DAS scores were analysed using dimensional scale scores and also as grouped data, after converting scale scores into 2 or 3 risk categories. All analyses using SPSS applied bootstrap methods to minimise potential problems associated with non-normality and the relatively small DFUs patient group of $n = 90$. Significance was set at $p \leq 0.05$; whenever statistical associations or differences are discussed, they are significant (unless stated otherwise). Full details on statistical findings are provided in tables and figures.

RESULTS AND INTERPRETATION

Table 1 shows the participants were predominantly males (86.7%), 89.7 % of the samples were more than 50 years .Majority of the patients had moderate nature of work and 43.3% of them suffering from DM for more than 10 years.53.3% of DM patients are having foot ulcer less than a year and majority of patients (66.7 %) were aware of foot care.

Table 1. Demographic variables

Demographic variables		No. of clients	%
Age	41-50 years	12	13.3%
	> 50 years	78	86.7%
Sex	Male	78	86.7%
	Female	12	13.3%
Education	illiterate	21	23.3%
	high school	15	16.7%
	higher secondary	33	36.7%
	degree	9	10.0%
	post graduate	12	13.3%
nature of work	heavy work	27	30.0%
	moderate	63	70.0%
income	< 3,000/pm	12	13.3%
	3001-5000/pm	15	16.7%
	>5000/pm	63	70.0%
Duration of DM	< 1 year	6	6.7%
	1 -5 year	12	13.3%
	6 -10 year	33	36.7%
	> 10 year	39	43.3%
Duration of foot ulcer	< 1 year	48	53.3%
	1 -5 year	33	36.7%
	6 -10 year	9	10.0%
follows dietary pattern	Yes	57	63.3%
	No	33	36.7%
nature of treatment	tablets	24	26.7%
	injection	27	30.0%
	both	39	43.3%
Foot care awareness	Yes	60	66.7%
	No	30	33.3%
exercise/walking	Yes	51	56.7%
	No	39	43.3%

Table 2. Prevalence of depression, anxiety and stress

Prevalence	No. of questions	Min –Max score	Mean	SD	% of score
Depression	7	0 - 21	9.40	5.21	44.8%
Anxiety	7	0 - 21	7.77	5.16	37.0%
Stress	7	0 - 21	10.17	5.10	48.4%
OVERALL	21	0 - 63	27.33	13.94	43.4%

Table 2 shows the percentage of prevalence of Depression (44.8%), Anxiety (37.0%), Stress (48.4%) among the Diabetic foot ulcer Clients attending HRM Clinic. The prevalence of Stress (48.4 %) in our study was more than depression (44.8 %) and anxiety(37.0 %).

Table 3. Level of das score

Level of prevalence	No. of clients	%
Mild	27	30.0%
Moderate	51	56.7%
Severe	12	13.3%
Total	90	100%

Table 3 shows overall level of prevalence of DAS and it is estimated that mild level of DAS is 30.0%, moderate level constitutes 56.7% and severe level is 13.3%.

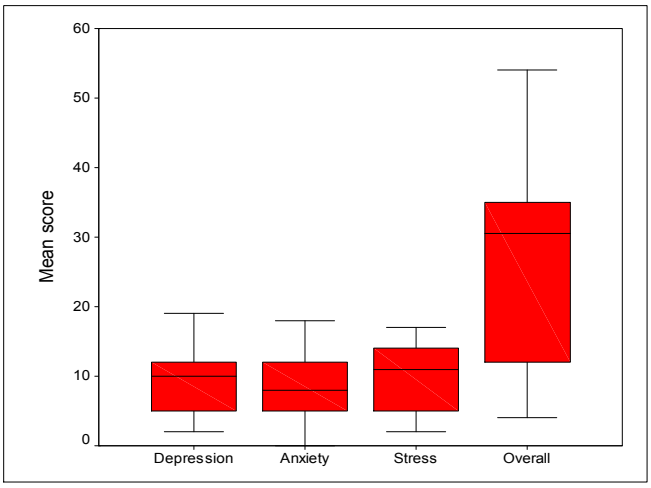

Fig.1. Box plot shows the mean depression, anxiety, stress and overall score among the Diabetic foot ulcer Clients

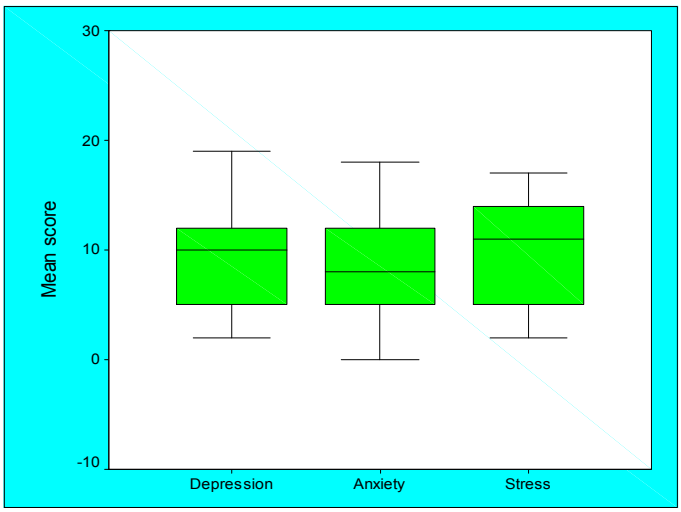

Fig.2. Box plot shows the mean depression, anxiety and stress score among the Diabetic foot ulcer Clients

Table 4. Association between DAS Level of score and demographic variables

Demographic variables		Level of score						Total	Chi square test
		Mild		Moderate		Severe			
		n	%	n	%	n	%		
Age	41-50 years	18	66.7%	6	22.2%	3	11.1%	27	χ2=25.50 p=0.001** S
	> 50 years	9	14.3%	45	71.4%	9	14.2%	63	
Sex	Male	24	30.8%	45	57.7%	9	11.5%	78	χ2=1.64 p=0.44 NS
	Female	3	25.0%	6	50.0%	3	25.0%	12	
Nature of work	heavy work	6	22.2%	15	55.6%	6	22.2%	27	χ2=3.07 p=0.21 NS
	moderate	21	33.3%	36	57.1%	6	9.5%	63	
Income	< 3,000/pm	2	16.7%	4	33.3%	6	50.0%	12	χ2=22.96 p=0.01** S
	3001-5000/pm	6	40.0%	6	40.0%	3	20.0%	15	
	>5000/pm	17	27.0%	41	65.1%	5	7.9%	63	
Duration of DM	< 1 year			6	100.0%			6	χ2=12.09p=0.67 NS
	1 -5 year	6	50.0%	6	50.0%			12	
	6 -10 year	6	18.2%	21	63.6%	6	18.2%	33	
	> 10 year	15	38.5%	18	46.2%	6	15.4%	39	
Duration of foot ulcer	< 1 year	19	39.5%	27	56.2%	2	4.3%	48	χ2=21.05 p=0.01** S
	1 -5 year	6	18.2%	21	63.6%	6	18.2%	33	
	6 -10 year	2	22.2%	3	33.3%	4	44.5%	9	
Follows dietary pattern	Yes	12	21.0%	42	73.7%	3	5.3%	57	χ2=19.69 p=0.001*** S
	No	15	45.6%	9	27.2%	9	27.2%	33	
Nature of treatment	tablets	10	41.6%	10	41.6%	4	16.7%	24	χ2=7.48 p=0.49 NS
	injection	6	22.2%	18	66.7%	3	11.1%	27	
	both	11	28.2%	23	58.9%	5	12.8%	39	
Foot care awareness	Yes	18	30.0%	32	53.3%	10	16.7%	60	χ2=1.85 p=0.39 NS
	No	9	30.0%	19	63.3%	2	6.7%	30	
Exercise/walking	Yes	6	11.7%	42	82.3%	3	5.9%	51	χ2=31.65p=0.001*** S
	No	21	53.8%	9	23.1%	9	23.1%	39	

Table 4 shows the association between DAS level of score and demographic variables of the clients. On analysis using Pearson chi-square test, DAS was found to be significantly high level of score with patients of age more than 50 years (p=0.001**) and strongly associated with low income group (p=0.01**). It was also found that there was high significance between DAS score level and longer duration of foot ulcer(p=0.01**). Similarly, Clients not following no dietary pattern and patients do not practice regular exercise having more statistically significant DAS score (p=0.001***).

DISCUSSION

The prevalence of DAS in our study was 30.0 %, 56.7 %, 13.3 %, respectively. These were higher compared with a similar study in klang Valley, Malaysia by Gurpreet *et al*, where the prevalence of DAS was 11.5 %, 14 % and 12 %, respectively. The higher prevalence may be due to the non utilisation of available foot care services and poor Diabetic management. However, a study conducted by Roshana *et al* found the prevalence of depression to be 42.3 % among 260 respondents from the diabetic Centre, Hospital USM (HUSM). Our study also found that there was a strong association between low monthly income and have strong stress and depression symptoms (p=0.01). Higher age (>50 yrs) clients have high stress and depression than those with less age and also duration of DFUs (>10 yrs) appears to be a strong (44.5 %) predictor for stress symptoms. There are evidences that by treating other co-morbidities of diabetes, it is possible to reduce depression levels and increase the ability to self-care which will also reduce the impact of diabetes. Complications of diabetes such as neuropathy and subsequent DFUs have a significant impact on patients' adherence behaviours and not just their ability to self-care. Research into these adherence behaviours has led to improvements in the methods, education, and information is delivered to patients with an aim to empower individuals in the management of their condition. When patients can be effectively engaged in their treatment and responsibility for their own care is promoted, health outcomes will be shown to improve. *The American Diabetes Association (ADA) guidelines also state that "assessment of psychological and social situations should be included as ongoing part of the medical management of diabetes". There are strong evidences suggesting that stress can disrupt the body's ability to heal wounds. National evidenced-based guidelines on type 2 diabetes mellitus conclude that a multidisciplinary specialist foot care team can reduce ulcerations and amputations in people with high-risk feet. Hence, it is essential to treat the psychiatric disorders such as Depression, Anxiety and Stress among the DFU clients in a holistic Diabetic management.*

Recommendations

1. It is necessary to address the mental health problems such as Depression, Anxiety and Stress among DFU clients. Appropriate Medical care and Psychological counselling needs to be provided.
2. Develop appropriate interventions to enhance the mental health and well-being of the clients with DFU.
3. Provide family centered care in order to improve psychological well being of the diabetic foot ulcer clients.
4. Diabetic Nurse Educator cum Podiatrist needs to be employed in HRM dept.
5. A holistic care to be given for all DFU clients through Multi Disciplinary approach.
6. Nurses play a crucial role in reducing the Mental health Problems among DFU clients

Conclusion

The integration of mental health specialists into the multidisciplinary treatment of patients with a DFU could assist in negotiating the specific balance between the medical and psychological model of treatment. Clinician's awareness of the high risk of anxiety and depression in mostly older and vulnerable adults should guide appropriate screening and care

planning and by providing psychological support will results in better Diabetic management outcomes.

REFERENCES

Armstrong DG and Lipsky BA. 2005. "Preventing foot ulcers in patients with Diabetes," *JAMA*, 293:217-28.

Boulton AJ *et al*. 2005. "The global burden of diabetic foot disease". *Lancet*, 366(9498):1719–24.

Christian LM *et al*. 2006. "Stress and wound healing", *Neuro immunomodulation*, 13(5): 337–46.

Lazo M, *et al*. 2008. "Examining a bidirectional association between depressive symptoms and diabetes", *JAMA*, 299:2751-9.

Leung PC, 2007. "Diabetic foot ulcers — A comprehensive review", Surgeon; 5(4):219–3.

Lin, EH and Kroenke K. 2007. "The association of depression and anxiety with medical symptom burden in patients with chronic medical illness", *Gen Hosp Psychiatry*, 29:147-55.

McEwen LN *et al*. 2013. "Prevalence and risk factors for diabetes-related foot complications in Translating Research Into Action for Diabetes (TRIAD)", *J Diabetes Complications*; 27(6): 588–92.

Pouwer F *et al*. 2006. "Nurses' recognition and registration of depression, anxiety and diabetes-specific emotional problems in outpatients with diabetes mellitus," *Patient Edu Couns*., 60: 235-40.

Shaw JE *et al*. 2010. "Global estimates of the prevalence of diabetes for 2010and 2030". *Diabetes Res Clin Pract*., 87: 4-14.

Vileikyte L, *et al*. 1998. "Multicentre study of the incidence of and predictive risk factors for diabetic neuropathic foot ulceration," *Diabetes Care*, 21:1071-5.

Walburn J *et al*. 2009. "Psychological stress and wound healing in humans: A systematic review and metaanalysis", *J Psychosom Res*., 67(3): 253–7.

Wilds, Roglic *et al*. 2004. "Global prevalence of diabetes: Estimates for the year 2030", Diabetes Care, 27:1047-1053.

****