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RESEARCH ARTICLE

A STUDY TO ASSESS THE LEVEL OF STRESS AMONG THE PATIENTS WITH CHRONIC DIABETES MELLITUS ADMITTED IN SELECTED HOSPITALS

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Abstract

Introduction: Diabetes mellitus is a disease which must be controlled over the lifetime of a patient. The diagnosis and presence of a chronic disease may be considered a difficult and stressful situation in life, a situation in which coping mechanisms are psychological processes developed at a conscious level to manage these situations.

Methodology: Quantitative Research Approach and Descriptive Research Design were adopted for this study. The setting of the study was Sri ManakulaVinayagar Medical College and Hospital at Puducherry. Totally 200 Chronic Diabetes Mellitus Patients who were attending Medical and Surgical OPD and Inpatients department in selected hospital were selected as sample. Purposive Sampling technique was used to select the samples for this study.

Results: Regarding level of stress majority of them 168(84%) were in severe stress, 24(12%) were in moderate stress level, Only 6(3%) of them are having extremely severe stress and only one (0.5%) of them were in normal and mild level of stress. There is significant difference between level of stress with selected demographic variable such as religion. There is no significant difference between level of stress with selected clinical variables. There is significant difference between the level of stress with psychosocial variable such as type of diet, socio economic status and nature of work.

Conclusion: The results of the present study highlights the majority of diabetes patients had severe stress.

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Introduction:-

Diabetes is a chronic disease that is expanding at an alarming rate in the world. The International Diabetes Federation reports that the prevalence of diabetes has reached a global epidemic level (Zareban I et al., 2014).

The highest prevalence of diabetes has been observed in the Middle East and North Africa Region (MENA region), where Iran is located. According to the latest estimates, 35.4 million people (9.1% of adults) in this region have diabetes, which is predicted to double by the year 2030. Surprisingly, Iran is ranked third in the MENA region, in terms of the total number of adults with diabetes (Nasli-Esfahani E et al., 2017).

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Now a day, more than 415 million people in the world suffer from diabetes, which is projected to hit 642 million by 2040 (Nasli-Esfahani E et al., 2017).

WHO has reported the prevalence of diabetes among Iranian men and women as 9.8 and 11.1%, respectively (Bianco A et al., 2013)(Zareban I et al., 2014). According to WHO, currently about 3 million Iranians have diabetes and if effective action is not taken, this figure will reach 7 million by 2030. This disease is the most common cause of amputation, blindness, and chronic renal failure and it is a risk factor for developing heart disease (Shaw JE et al., 2010). Stress is a psychological reaction to events in one's environment that cause tension and anxiety, often because the individual feels that they cannot cope or manage the situation. Stress has even been linked to reduced brain function through the deterioration of brain cells. (Sathiya K et al., 2017).

Need for the study:-

Stress is a major public health problem in India. It affects large numbers of adolescents middle aged groups both men and women residing in urban, rural areas and slums. At the individual and family level, stress leads to poor quality of life, causing huge social and economic impact (Danasu et al., 2018).

The researcher felt the need of conducting the present study with justification to retreat to the information even if it is gained through various means from Medias and the formal planned educational intervention program, which will be given in the clinical area while attending the hospital will have definite impact on the mental health and wellbeing. Hence this present study was conducted to identify the level of stress among Diabetic patients with specific objectives.

Statement of the Problem

“A Study to Assessthe level of Stress among the Patients with Chronic Diabetes Mellitus admitted in selected hospitals, at Puducherryin aview to prepare self-instructionalmodule”.

Objectives:-

1. To assess the level of stress among the patients with chronic diabetes mellitus.
2. To associate the level of stressamong the patients with chronic diabetes mellitus with their selected demographic variables.

Research Methodology:-

Quantitative Research Approach was used in this study. Descriptive Research Design was adopted for this study. The setting of the study was Sri ManakulaVinayagar Medical College and Hospital at Puducherry. The samples were Patients attending Medical and Surgical OPD and Inpatients department in SMVMCH, who fulfill the inclusion criteria, available during the period of study data collection. The sample size was 200 Chronic Diabetes Mellitus Patients. Purposive Sampling technique was used to select the samples for this study.

Sample Selection Criteria

Inclusion criteria

Diabetic Mellitus Patients,

1. Patients who have diabetic mellitus more than 5 years
2. Both male and female diabetic mellitus patients
3. Who are all available during the time of data collection

Exclusion criteria:

1. Patient with psychiatric illness.
2. All Juvenile diabetes mellitus.
3. Patient who are critically ill

Description of Tool

The tool used for this study is a standardized tool, the tool consists of 2 sections namely,

Section A:

Variables, It consists of 3 sub divisions such as,

Demographic Variables, clinical variables and psycho social variables.**Section B:****Stress Assessment Scale**

In this study the standard stress assessment scale was used, it consists of 7 items, and 3 point Likert Scale, Total marks 42. The scoring of stress was interpreted as score of 0-14 considered as normal , 15-18 as Mild stress, 19-25 as Moderate stress, 26-33 as Severe stress and more than 37 as extremely severe stress.

Protection of Human Rights

Approval and ethical clearance from the dissertation committee of the institution prior to conducting pilot study and main study was obtained by the researcher. Formal permission was obtained from concerned authorities of selected department. Oral and written consent was obtained from samples after explanation regarding the objectives and nature of study and confidentiality was maintained throughout the study.

Data Collection Procedure

The formal permission obtained from the concerned authorities. The samples were selected by using purposive sampling technique. The researcher introduced himself and explains about the purposes of the study to the patients. Each day 3 to 10 samples were selected and the researcher obtained the consent from samples. After that the researcher assessed the samples with demographic variables, clinical variables and psychosocial variables. The researcher was selected 200 samples in between the 6 weeks of study duration. At last the researcher evaluated the stress among the patients with chronic diabetic mellitus. The researcher were administered the self-instructional module in order to promote the awareness regarding improve the coping abilities and reducing the stress level by the researcher own interest.

Plan for Data Analysis

The collected data will be organized by,

1. Descriptive statistics

Frequency, percentage, distribution, mean, standard deviation and mean percentage were used to assess the stress among the patients with chronic diabetes mellitus.

2. Inferential statistics

a. Chi – square test was used to find out the association of stress among the patients with chronic diabetes mellitus with the variables.

The Organization Of Analyzed Data

The data was organized, tabulated and analyzed according to the objectives. Data analysis begins with description that applies to the study in which the data are numerical with some concepts. Descriptive statistics allows the researcher to organize the data and to examine the quantum of information and inferential statistics is used to determine the relationship and causality. Data collected were organized under the following sections.

Section A:

Mean Standard deviation and Mean Percentage of level of stress among patients with chronic diabetes mellitus.

Section B:

Frequency and percentage wise distribution of level of stress among patients with chronic diabetes mellitus.

Section C:

Association between level of stress with their selected demographic Variable

Section D:

Association between level of stress with their selected clinical variable

Section E:

Association between level of stress with selected psychosocial variable

Table 1:- Mean and standard deviation of level of stress among patients with chronic diabetes mellitus (N=200).

Stress	MaxScore	Range	Score		
			Mean	SD	Mean%

Overall stress	42	36-10	27.80	3.19	66
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Table 1 shows Mean, SD and Mean% of the level of stress among patients with diabetes mellitus reveals that, above average 66% of them had stress level which was Mean score of 27.80±3.19. It can be interpreted that, majority of them were stress level high in this study.

Table 2:- Frequency and percentage distribution level of stress among patients with chronic diabetes mellitus (N=200).

Level of stress	Score	
	f	%
Normal	1	0.5
Mild	1	0.5
Moderate	24	12
Severe	168	84
Extremely severe	6	3
Total	200	100

Table 2: reveals that the frequency and percentage distribution of level of stress among patients with chronic diabetic mellitus thus the majority of them 168(84%) were stress level was severe. Whereas, the next highest percentage 24(12%) of them were moderate level of stress, Only 6(3%) of them are having extremely severe stress. Whereas, each only one (0.5%) of them were in normal and mild level of stress. It shows that of majority of them had severe stress.

Table 3:- Association between level of stress with their selected demographic variable (N=200).

Demographic variables	No stress		Mild		moderate		Severe		Extremely Severe		χ ²	p-value
	f	%	f	%	f	%	f	%	f	%		
1. Age (in years):											1.728 (df =12)	NS
a) 20-24 years	0	0	0	0	0	0	1	0.5	0	0		
b) 25-30 years	0	0	0	0	0	0	5	2.5	0	0		
c) 31-35 years	0	0	0	0	1	0.5	9	4.5	0	0		
d) Above 35 years	1	0.5	1	0.5	23	11.5	153	76.5	6	3		
2. Gender:											2.05 (df=4)	0.726 NS
a) Male	1	0.5	0	0	13	6.5	90	45	3	1.5		
b) Female	0	0	1	0.5	11	5.5	78	39	3	1.5		
3. Religion:											24.49 (df=8)	0.002*S
a) Hindu	1	0.5	1	0.5	22	11	147	73.5	3	1.5		
b) Muslim	0	0	0	0	1	0.5	14	7	0	1.5		
c) Christian	0	0	0	0	1	0.5	7	3.5	3	1.5		
d) Others	0	0	0	0	0	0	0	0	0	0		

4. Educational status :													
a) Primary school	1	0.5	0	0	7	3.5	56	28	2	1			
b) Secondary school	0	0	0	0	7	3.5	51	25.5	3	1.5	9.21(df=12)	0.685 NS	
c) Graduate	0	0	0	0	3	1.5	10	5	1	0.5			
d) Illiterate	0	0	1	0.5	7	3.5	51	25.5	0	0			
5. Place of living:													
Urban	1	0.5	0	0	12	6	84	42	2	1	2.65 (df=4)	0.619 NS	
Rural	0	0	1	0.5	12	6	84	42	4	2			
6. Occupation:													
a) Unemployee	1	0.5	1	0.5	23	11.5	158	79	5	2.5	1.48 (df=4)	0.83 NS	
b) Employee	0	0	0	0	1	0.5	10	5	1	0.5			
7. Marital status:													
a) Married	1	0.5	1	0.5	24	12	164	82	6	3	0.77 (df=4)	0.941 NS	
b) Unmarried	0	0	0	0	0	0	4	2	0	0			
8. Income :													
a) 5001-7000	0	0	1	0.5	12	6	91	45.5	2	1	9.09 (df=8)	0.334 NS	
b) 7001-10000	1	0.5	0	0	6	3	44	22	4	2			
c) Above 10001	0	0	0	0	6	3	33	16.5	0	0			

*-P<0.05 ,significant and **-P<0.01 & ***-P<0.001 , Highly significant

Table 3 findings reveals that the association between level of stress and demographic variables, there was association found between level of stress and demographic variables that the religion ($\chi^2=24.49$, $p= 0.002^*$) was significantly associated with the level of stress. In religion most of them in Hindus and they were in severe level of stress.

In Hindu Religion, 147 patients having severe level of stress 22 of them in moderate level of stress three of them in extremely severe stress, one person in mild stress and one person have no stress. In Muslim, 14 patients had severe stress, one person were moderate stress. In Christian seven patient had severe stress, three of them extremely severe stress, one person in moderate stress.

Table 4:- Association between level of stress with their selected clinical variable (N=200).

Demographic variables	No stress		Mild		moderate		Severe		Extremely Severe		χ^2	p-value
	f	%	f	%	f	%	f	%	f	%		

1.Typeof diabetesmellitus :													
a) insulin dependent dm	1	0.5	1	0.5	5	2.5	85	42.5	2	1			
b) non insulindependentdm	0	0	0	0	19	9.5	82	41	4	2		10.55	0.229
c) post gestational dm	0	0	0	0	0	0	1	0.5	0	0		(df=8)	NS
2.Duration of diabetesMellitus:													
a) Below 5 years	0	0	0	0	0	0	1	0.5	0	0		7.72	0.461
b) 5 to 10 years	0	0	1	0.5	21	10.5	144	72	6	3		(df=8)	NS
c) More than 10 years	1	0.5	0	0	3	1.5	23	11.5	0	0			
3. Treatment regimen :													
a) Oral glyceemic	0	0	0	0	19	9.50	80	40	4	2		11.13	0.194
b) With Insulin	1	0.5	1	0.5	5	2.5	87	43.5	2	1		(df=8)	NS
c) Without insulin	0	0	0	0	0	0	1	0.5	0	0			
4. Level of glucosecontrol:													
a) Low	0	0	0	0	0	0	5	2.5	0	0		1.18	0.997
b) Normal	0	0	0	0	0	0	1	0.5	0	0		(df=2)	NS
c) High	1	0.5	1	0.5	24	12	162	81	6	3			
5.Presence ofcomplication:													
a) Yes	1	0.5	1	0.5	23	11.5	158	79	6	3		0.61	0.962
b) No	0	0	0	0	1	0.5	10	5	0	0		(df=4)	NS
6.Type of complication :													
a) Nil	0	0	0	0	1	0.5	3	1.5	0	0			
b) Neuropathy	0	0	0	0	6	3	25	12.5	1	0.5		10.70(d	0.991
c) Retinopathy	0	0	1	0.5	4	2	44	22	1	0.5		f=24)	NS
d) Cardiopathy	1	0.5	0	0	8	4	66	33	4	2			
e) Nephropathy	0	0	0	0	1	0.5	20	10	0	0			
f) Foot ulcer	0	0	0	0	0	0	8	4	0	0			
g) Surgical condition	0	0	0	0	0	0	0	0	0	0			
h) Gynecologicalconditi on	0	0	0	0	0	0	0	0	0	0			
7.Alternative medicine:													
a) Sidha	0	0	0	0	4	2	14	7	2	1			
b) Ayurvedha	0	0	0	0	0	0	1	0.5	0	0		6.53(df	0.981
c) Homeopathy	0	0	0	0	0	0	2	1	0	0		=16)	NS
d) Unani	0	0	0	0	0	0	3	1.5	0	0			
e) None	1	0.5	1	0.5	20	10	148	74	4	2			

Table 4,shows thatassociation between level of stress and clinical variables reveals that, therewas no association found between level of stress and clinical variables that, regarding type of diabetes one of themwas in normal and

mild level of stress, six of them were extremely severe level of stress, 24 of them were in moderate level of stress, majority of them in severe level of stress.

Table 5:- Association between level of stress with their selected psychosocial variable (N=200).

Demographic variables	No stress		Mild		moderate		Severe		Extremely Severe		χ^2	p-value
	f	%	f	%	F	%	f	%	f	%		
1. Type of diet :												
a) Vegetarian	1	0.5	0	0	0	0	10	5	2	1	44.95 (df=8)	P<0.001***S
b) Nonvegetarian	0	0	1	0.5	6	3	9	4.5	1	0.5		
c) Mixed	0	0	0	0	18	9	149	74.5	3	1.5		
2. Socioeconomic status:												
a) Low	0	0	0	0	19	9.5	156	78	6	3	26.3 (df=8)	0.001**S
b) Middle	1	0.5	1	0.5	5	2.5	11	5.5	0	0		
c) High	0	0	0	0	0	0	1	0.5	0	0		
3. Nature of work :												
a) Active worker	1	0.5	0	0	20	10	159	79.5	5	2.5	17.16 (df=4)	0.002**S
b) Sedentary worker	0	0	1	0.5	4	2	9	4.5	1	0.5		
4. Type of worker:												
a) Heavy worker	1	0.5	1	0.5	23	11.5	156	78	5	2.5	1.31 (df=4)	0.859 NS
b) Office worker	0	0	0	0	1	0.5	12	6	1	0.5		
5. Hours of work :												
a. 6-8 hrs	0	0	0	0	13	6.5	49	24.5	2	1	7.11 (df=2)	0.525 NS
b. 9-12 hrs	1	0.5	1	0.5	11	5.5	118	59	4	2		
c. More than 12 hrs	0	0	0	0	0	0	1	0.5	0	0		
6. Duration of sleep:												
a) 2-4 hrs	1	0.5	1	0.5	22	11	144	72	5	2.5	1.01 (df=4)	0.910 NS
b) 5-7 hrs	0	0	0	0	2	1	24	12	1	0.5		
c) 8-10 hrs	0	0	0	0	0	0	0	0	0	0		
7. Family history of diabetes												
a) Yes	0	0	1	0.5	5	2.5	54	27	2	1	3.95 (df=4)	0.412 NS
b) No	1	0.5	0	0	19	9.5	114	57	4	2		

8. Follow up visit:													
a) Regular	0	0	1	0.5	16	8	123	61.5	5	2.5	3.82	0.431	
b) Irregular	1	0.5	0	0	8	4	45	22.5	1	0.5	(df=4)	NS	
9. Type of family;													
a) Nuclear	0	0	1	0.5	17	8.5	109	54.5	6	3	5.91	0.206	
b) Joint	1	0.5	0	0	7	3.5	59	29.5	0	0	(df=4)	NS	
10. practice of relaxation:													
a) Yes	0	0	0	0	5	2.5	23	11.5	0	0	2.25	0.691	
b) No	1	0.5	1	0.5	19	9.50	145	72.50	6	3	(df=1)	NS	
11. Social support:													
a) Adequate	0	0	0	0	1	0.5	3	1.5	0	0	0.77	0.941	
b) Inadequate	1	0.5	1	0.5	23	11.5	165	82.5	6	3	(df=4)	NS	
12. Bad habits:													
a) Alcohol	0	0	0	0	13	6.5	65	32.5	3	1.5	5.516(d	0.938	
b) Smoking	0	0	0	0	2	1	17	8.5	0	0	f=12)	NS	
c) Tobacco	0	0	0	0	0	0	4	2	0	0			
d) None	1	1.5	1	1.5	9	4.5	82	41	3	1.5			

*-P<0.05 , significant and **-P<0.01 & ***-P<0.001 , Highly significant

Table 5: shows that association between level of stress and psychosocial variables reveals that, the type of diet ($\chi^2=44.95$, $p=0.001^{***}$), socio economic status ($\chi^2=26.3$, $p=0.001^{**}$) and nature of work ($\chi^2=17.16$, $p=0.002^{**}$) were significantly found in association with the level of stress. In type of diet most of them taking mixed diet, in socio economic most of them were in low socio economic status and in nature of work most of them were inactive worker.

Regarding mixed diet 149 belong to severe stress 18 patients had moderate level of stress 3 of them in extremely severe stress, In vegetarian, 10 patients had in severe stress, two of them extremely severe stress. In Non vegetarian, nine patients had severe stress, six patients had moderate stress, one patient had extremely severe stress.

The type of diet is highly significant with level of stress, because, if they are practiced healthy diet, the glucose control, would be maintained, So psychologically the client feels to be normal and fit.

If the patient leads stress free life means, they definitely practice good quality of life and coping strength and they have psychological wellbeing.

Regarding socio economic status 156 of them belongs to low they had severe stress and 19 of them had moderate stress, and six of them had extremely severe stress, and 11 of them to middle socio economic status they had severe stress, and five of them moderate stress, and one patient belongs to mild stress and one patient belongs to no stress. Only one of them high socio economic status in this patient comes to severe stress. Regarding nature of work 159 of them belongs to active worker they had severe stress and 20 of them belongs to moderate stress, and five of them belongs to extremely severe stress, only one of them no stress. And nine of them belongs to sedentary worker they had severe stress, and four of them belongs to moderate stress, and one of them belongs to extremely severe stress and one of them belongs to mild stress.

Major Findings Of The Study:

In stress level, the overall score of stress level among patients with chronicdiabetic mellitus, the mean value was 27.80, standard deviation was 3.19, and the mean percentage was 66.

In this study, it shows that the patients with chronic diabetic mellitus have beenaffected by many causes but mainly in chronic conditions they are mostly affected bystress .This will reduces the coping strategies among the diabetic patientsalong with the patients was affected by secondary symptoms were araised. So it will increase the stress of the patients.

In assessment of stresslevel concludes that, the majority of them 168(84%) were severe stress24(12%)ofthemweremoderate level of stress, Only 6(3%) of them are having extremely severe stress, only one (0.5%) patient in normal and mild level of stress.

There is significant different between level of stress with demographic variables such as religion.

Regarding Religion of the patient,In Hindu 147 patients having severe level of stress, 22 of them in moderate level of stress three of them in extremely severe stress, one person in mild stress and one person have no stress. In Muslim, 14 patients had severe stress, one person were moderate stress. In Christian seven patient had severe stress, three of them extremely severe stress, one person in moderate stress.

There is no significant difference between level of stress with selected clinical variables.

There is significant difference between the level of stress with psychosocial variable such as type of diet, socio economic status and nature of work.

In type of diet, 149 belongs to severe stress 18 patients had moderate level of stress 3 of them in extremely severe stress in mixed diet; In vegetarian, 10 patients had in severe stress, two of them extremely severe stress. In Non-vegetarian, nine patients had severe stress, six patients had moderate stress, and one patient had extremely severe stress.

The type of diet is highly significant with level of stress, because, if they are practiced healthy diet, the glucose control, would be maintained, so psychologically the client feels to be normal and fit.

Regarding socio economic status 156 of them belongs to low they had severe stress and 19 of them had moderate stress, and six of them had extremely severe stress, and 11 of them to middle socio economic status they had severe stress, and five of them moderate stress, and one patient belongs to mild stress and one patient belongs to no stress. Only one patient in high socio economic status had severe stress.

Regarding nature of work 159 of them belongs to active worker they had severestress and 20 of them belongs to moderate stress, and five of them belongs to extremely severe stress, only one of them no stress. And nine of them belongs to sedentary worker they had severe stress, and four of them belongs to moderate stress, and one of them belongs to extremely severe stress and one of them belongs to mild stress.

The study of Attari et al., (2006) also demonstrated the beneficial effects of stress management program in controlling blood glucose levels in diabetic patients. Jenifer et al., (2021) study results indicate that effective stress management and coping skills will positively impact diabetes self-care.

Hamid's (2011) study in Iran showed that stress management training was effective in controlling blood glucose and decreasing depression, anxiety, stress, and HbA1c levels in diabetic women. In another study conducted by Surwit et al., (2002) at Duke University Outpatient Clinics, the results showed that stress management training program is a useful and cost-effective technique in reducing the HbA1c levels in diabetic patients.

Conclusion:-

The diabetes mellitus patients had severe stress about diabetes, effects and its management. Effective teaching learning activities and intensive management of Diabetes Mellitus may have immense effect on positive mental health and wellbeing of the Diabetic patients.

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The author has declared that there was no funding (Self).

Data Accessibility

The datasets are available from the corresponding author on reasonable request.

Ethical Issues

Formal permission obtained from the institution. The objectives of the study were explained to the samples and informed consent obtained from them. They were also assured about the confidentiality of the data.

Conflict of Interests

None.

References:-

1. Attari A, Sartippour M, Amini M, Haghghi S. Effect of stress management training on glycemic control in patients with type 1 diabetes. *Diabetes Res ClinPract.* 2006;73(1):23–8. Article CAS PubMed Google Scholar
2. Bianco A, Pomara F, Thomas E, Paoli A, Battaglia G, Petrucci M, Proia P, Bellafiore M, Palma A. Type 2 diabetes family histories, body composition and fasting glucose levels: a cross-section analysis in healthy sedentary male and female. *Iran J Public Health.* 2013;42(7):681. PubMed PubMed Central Google Scholar
3. Danasu.R, Sathiyakala.K,(2018) Assess the Level of stress , *International Journal of Current Research* ,vol- 10, Issue, 01, pp.64368-64371, January, 2018Google Scholar
4. Hamid N. Effects of stress management training on glycemic control in women with type 2 diabetes. *Iran J EndocrinolMetab.* 2011;13(4):346–53. Google Scholar
5. Jenifer.J.Thomas et al(2021), Influence of stress and coping on diabetes self care activities, *Journal of American college health:* 2021. Google Scholar
6. Karimy M, Araban M, Zareban I, Taher M, Abedi A. Determinants of adherence to self-care behavior among women with type 2 diabetes: an explanation based on health belief model. *Med J Islam Repub Iran.* 2016;30:368.
7. Nasli-Esfahani E, Farzadfar F, Kouhnavard M, Ghodssi-Ghassemabadi R, Khajavi A, Peimani M, Razmandeh R, Vala M, Shafiee G, Rambod C. Iran diabetes research roadmap (IDRR) study: a preliminary study on diabetes research in the world and Iran. *J Diabetes MetabDisord.* 2017;16(1):9. Article PubMed PubMed Central Google Scholar
8. SathiyakalaK, DanasuR (2017)Effect of mbsr in reducing stress, *International Journal of Information Research and Review*, Vol. 04, Issue, 09, pp.4512-4515, September, 2017Google Scholar
9. Shapiro SL, Astin JA, Bishop SR, Cordova M. Mindfulness-based stress reduction for health care professionals: results from a randomized trial. *Int J Stress Manage.* 2005;12(2):164. Article Google Scholar
10. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res ClinPract.* 2010;87(1):4–14. Article CAS PubMed Google Scholar
11. Surwit RS, Van Tilburg MA, Zucker N, McCaskill CC, Parekh P, Feinglos MN, Edwards CL, Williams P, Lane JD. Stress management improves long-term glycemic control in type 2 diabetes. *Diabetes Care.* 2002;25(1):30–4. Article PubMed Google Scholar
12. Torres JB, Solberg VS. Role of self-efficacy, stress, social integration, and family support in Latino college student persistence and health. *J VocatBehav.* 2001;59(1):53–63. Google Scholar
13. Zareban I, Karimy M, Niknami S, Haidarnia A, Rakhshani F. The effect of self-care education program on reducing HbA1c levels in patients with type 2 diabetes. *J Educ Health Promot.* 2014;3:123. Article PubMed PubMed Central Google Scholar
14. Zareban I, Niknami S, Hidarnia A, Rakhshani F, Shamsi M, Karimy M. Effective intervention of self-care on glycaemia control in patients with type 2 diabetes. *Iran Red Crescent Med J.* 2014;16(12):8311. Article Google Scholar.