IJIRR

International Journal of Information Research and Review
Vol. 06, Issue, 06, pp.6374-6380, June, 2019

RESEARCH ARTICLE

A CROSS-SECTIONAL STUDY TO ASSESS THE DEPRESSION AND GLYCEMIC CONTROL AMONG PATIENTS WITH DIABETES MELLITUS AT SMVMCH, PUDUCHERRY

[1]Prof. Dr. Danasu, [2]Mrs. K. Neeladevi and [3]Miss. T. Saranya

[1] Principal, Sri Manakula Vinayagar Nursing College, India
[2] HOD cum Professor, Sri Manakula Vinayagar Nursing College, India
[3] M.Sc., Nursing II - Year, Sri Manakula Vinayagar Nursing College, India

ARTICLE INFO

Article History:
Received 12th March, 2019
Received in revised form
20th April, 2019
Accepted 15th May, 2019
Published online 30th June, 2019

Keywords:
Esthetics, Complete Denture,
Facial Esthetic.

ABSTRACT

Background: Diabetes mellitus is a major health problem that is associated with psychological, as well as physical, complications, particularly depression. Depression and diabetes are associated with dysfunction of the hypothalamic – pituitary adrenal (HPA) axis, which manifests as subclinical, hypercortisolism, blunted diurnal cortisol rhythm or hypercortisolism with impaired glucocorticoid sensitivity and increased inflammation. **Aim:** The aim of the study is to assess the depression and glycemic control among patients with diabetes mellitus. **Methods:** A cross-sectional study consists of 200 diabetes mellitus patients. Data were collected by using Hamilton Depression Rating Scale and observational checklist. **Results:** A sample of 200 diabetes mellitus patients were included in the study, the prevalence of depression was around 128(64%) had very severe depression, 40(20%) of them had severe depression, 30(15%) had moderate depression and only 2(1%) had mild depression among patients with diabetes mellitus. The calculated Karl Pearson's Correlation value of r = 0.538 between depression and fasting glucose level shows that moderate positive correlation which was found to be highly statistically significant at $p<0.001$ level and Correlation value r = 0.401 between depression and post-prandial blood level shows a moderate positive correlation which was found to be statistically significant at $p<0.001$ level. **Conclusion:** Thus the study findings clearly reveal that the diabetes mellitus patients prone to develop depression and the awareness programme could not control the prevalence rate of developing depression among diabetes mellitus patients and more focus should be given for the male gender, illiterate, unemployed, mixed diet and poor physical activity among patients with diabetes mellitus.

INTRODUCTION

Diabetes mellitus is a major health problem that is associated with psychological, as well as physical, complications, particularly depression. According to WHO, depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self–worth, disturbed sleep or appetite, feelings of tiredness and poor concentration. Depression is different from usual mood fluctuations and short-lived emotional responses to challenges in everyday life. Depression and diabetes are associated with dysfunction of the hypothalamic – pituitary adrenal (HPA) axis, which manifests as subclinical, hypercortisolism, blunted diurnal cortisol rhythm or hypercortisolism with impaired glucocorticoid sensitivity and increased inflammation. However, in human studies, programming of the hypothalamic-pituitary-adrenal (HPA) axis and elevated cortisol reactivity in childhood, adolescence and adulthood may predispose the individual to stress-related and metabolic disorders. Several environmental factors including childhood adversity, neighbourhood environment and poverty influence the predisposition to depression and diabetes mellitus.

Corresponding author: **Miss. Saranya, T.,**
M.Sc., Nursing II - Year, Sri Manakula Vinayagar Nursing College, India.

Statement of the problem

"A cross-sectional study to assess the depression and glycemic control among patients with diabetes mellitus at SMVMCH, Puducherry"

Objectives:

- To assess the level of depression among patients with diabetes mellitus.
- To assess the glycemic level among patients with diabetes mellitus.
- To correlate the level of depression and glycemic level among patients with diabetes mellitus.

- To associate the level of depression and glycemic level among patients with diabetes mellitus.

METHODOLOGY

A cross-sectional research was used to assess the depression and glycemic control among patients with diabetes mellitus at SMVMCH, Puducherry": The target population who fulfills the inclusion criteria are selected for this study, a Purposive Sampling Technique was used to select 200 samples. A standardized tool Hamilton Depression Rating Scale for depression and Observational Checklist for Glycemic control was used to assess the depression and glycemic control among patients with diabetes mellitus. The score between No depression 0-7, Mild Depression 8-13, Moderate Depression 14-18, Severe Depression 19-22, Very Severe Depression ≥ 23 for depression and the score between Normal 0, At risk 1, High risk 2 for both Glycemic factors (Fasting glucose level and Post-prandial Glucose level). A formal permission was obtained from institute ethical committee. The reliability of tool was established by conducting a pilot study. The data collection was conducted for one month in SMVMCH at Puducherry. The investigator first introduced themselves to the patient and developed a good rapport with them. The investigators explained the purpose of the study and then gained their confidence by obtaining a written consent from samples. The data collection was done by interview method a separate questionnaire was used for each patient. Approximately 30 minutes were spent for each sample. Similarly the same data procedure was followed for the entire 200 samples.

MAJOR STUDY FINDINGS

Table 1 and Figure 1 shows that 164(82%) had high risk level of fasting glucose, 27(13.5%) had at risk level of fasting glucose and 9(4.5) had normal level of fasting glucose among patients with diabetes mellitus.

Table 3 and Figure 3.22 shows that 162(81%) had high risk level of post-prandial glucose, 37(18.5%) had at risk level of post-prandial glucose and only one (0.5) had normal lelevel of post-prandial glucose among patients with diabetes mellitus.

Table 3 and figure 3 depicts that 128(64%) had very severe depression, 40(20%) had severe depression, 30(15%) had moderate depression and only 2(1%) had mild depression among patients with diabetes mellitus.

Table 4 shows that the mean and standard deviation score of depression was 25.64±6.97, the mean and standard deviation score of fasting glucose was 178.89±63.53 and the mean and standard deviation score of post-prandial glucose was 280.53±85.20.

The calculated Karl Pearson's Correlation value r = 0.538 between depression and fasting blood level shows that moderate positive correlation which was found to be highly statistically significant at p<0.0001 level. The table reveals that calculated Karl Pearson's Correlation value of r = 0.401 between depression and post-prandial blood level shows a moderate positive correlation which was found to be highly statistically significant at p<0.0001 level. Table 4 and figure 4.1 shows that the correlation between depression and glycemic (Fasting Glucose) level among patients with diabetes mellitus. The analysis reveals that the mean and standard deviation score of fasting glucose was 178.89±63.53 and r = 0.538 between depression and fasting blood level shows that moderate positive correlation which was found to be highly statistically significant at p<0.0001 level.

Table 4 and figure 4.2 shows that the correlation between depression and glycemic (Post-prandial Glucose) level among patients with diabetes mellitus. The analysis depicts that the mean and standard deviation score of post-prandial glucose was 280.53±85.20 and r = 0.401 between depression and post-prandial blood level shows a moderate positive correlation which was found to be highly statistically significant at p<0.0001 level. Table 5 and Figure 5 shows that the proportion of high risk fasting glycemic level was high around (37%) among oral hypoglycemic, (33%) among oral hypoglycemic along with insulin and (12%) among insulin; at risk fasting glycemic level was high around (12%) among insulin, (7.5%) among oral hypoglycemic and (4%) among hypoglycemic along with insulin; normal fasting glycemic level exist around (4.5%) among oral hypoglycemic patients with diabetes mellitus. The association between the type of medication under clinical variable was found significant chi-square value is 11.030and at p value = 0.026 (p<0.05). Table 6 shows that the demographic variables religion, marital status, duration of illness and co-morbid illness had shown statistically significant association with post-prandial level at p<0.05 level, The clinical variable medication for diabetes had shown statistically highly significant association with post-prandial glycemic level at p<0.001 level and the other demographic and clinical variables had not shown statistically significant association with post-prandial glycemic level among patients with diabetes mellitus.

Table 6 and Figure 6.1 shows that the proportion of high risk post-prandial glycemic level was high around (71.5%) among Hindu, (8.5%) among Muslim and (1%) among Christian; at risk post-prandial glycemic level was high around (15%) among Hindu, (2.5%) among Muslim, (1%) among Christian; normal post-prandial glycemic level exist around (0.5%) among Muslim in diabetes mellitus patients. The association between the religion under demographic variables was found significant chi-square value is 10.773 and p value = 0.029 (p<0.05).

Table 6 and Figure 6.2 shows that the proportion of high risk post-prandial glycemic level was high around (49%) among more than 5 years patients and (32%) among below 5 years; at risk post-prandial glycemic level was high around (11%) among below 5 years patients and (7.5%) among more than 5 years patients; normal post-prandial glycemic level around (0.5%) among below 5 years patients. The association between the duration of illness under clinical variables was found significant chi-square value is 6.185 and p value = 0.045 (p<0.05). Table 6 and Figure 6.3 shows that the proportion of high risk fasting glycemic level was high around (34.5%) among oral hypoglycemic and insulin, (33%) among oral hypoglycemic and (13%) among insulin; at risk fasting glycemic level was high around (15%) among oral hypoglycemic, (1%) among oral hypoglycemic along with insulin; normal fasting glycemic level exist around (0.5%) among oral hypoglycemic patients with diabetes mellitus. The association between the type of medication under clinical variable was found significant chi-square value is 20.067 and p value = 0.0001 (p<0.0001).

Table 1. Distribution of fasting glucose level among patients with diabetes mellitus

(n=200)

LEVEL OF FASTING GLUCOSE	n	%
Normal (<100 mg/dl)	9	4.5
At risk (100 – 125 mg/dl)	27	13.5
High risk (126 mg/dl or more)	164	82.0

Table 2. Distribution of post-prandial glucose level among patients with diabetes mellitus

(n = 200)

LEVEL OF POST-PRANDIAL GLUCOSE	n	%
Normal (<140 mg/dl)	1	0.5
At risk (140 – 199 mg/dl)	37	18.5
High risk (200 mg/dl or more)	162	81.0

Table 3. Distribution of level of depression among patients with diabetes mellitus

(n = 200)

LEVEL OF DEPRESSION	n	%
No depression (0 – 7)	0	0
Mild depression (8 – 13)	2	1.0
Moderate depression (14 – 18)	30	15.0
Severe depression (19 – 22)	40	20.0
Very severe depression (≥23)	128	64.0

Table 4. Correlation between depression and glycemic level among patients with diabetes mellitus

(n= 200)

VARIABLES	MEAN	S.D	'r' VALUE
Depression	25.64	6.97	r = 0.538
Fasting glucose level	178.89	63.53	p = 0.0001, H.S***
Depression	25.64	6.97	r = 0.401
Post-prandial glucose level	280.53	85.20	p = 0.0001, H.S***

****p<0.0001, H.S – Highly Statistically Significant*

Table 5. Association between the fasting glycemic level among patients with diabetes mellitus with their selected demographic variables.

(n= 200)

Variables	Fasting glycemic level						χ^2	P value
	Normal (<100 mg/dl)		At risk (100 – 125 mg/dl)		High risk (126 mg/dl or more)			
	n	%	n	%	n	%		
CLINICAL VARIABLES								
Type of Medication								
Oral hypoglycemic	9	4.5	15	7.5	74	37.0	11.030 *df*=4	p=0.026 S*
Insulin	0	0	4	2.0	24	12.0		
Oral hypoglycemic and insulin	0	0	8	4.0	66	33.0		

**p<0.05, S – Significant, N.S – Not Significant*

Table 6. Association between the post-prandial glycemic level among patients with diabetes mellitus with their selected demographic variables

(n-200)

Variables	Post prandial glycemic level						χ^2	P valve
	Normal (<100 mg/dl)		At risk (100 – 125 mg/dl)		High risk (126 mg/dl or more)			
	N	%	n	%	n	%		
Demographic variables								
Religion								
Hindu	0	0	30	15	143	71.5	χ^2 = 10.773 *df* = 4	p=0.029 S*
Muslim	1	0.5	5	2.5	17	8.5		
Christian	0	0	2	1	2	1.0		
Others	-	-	-	-	-	-		

……Continue

Variables	Post prandial glucose						χ^2	p value
	Normal (<100 mg/dl)		At risk (100 – 125 mg/dl)		High risk (126 mg/dl or more)			
	n	%	n	%	n	%		
Demographic variables								
Marital status								
Married	0	0	34	17.0	148	74.0	χ^2=11.050 *df*=4	p=0.026 S*
Unmarried	-	-	-	-	-	-		
Separated	0	0	0	0	1	0.5		
Widow	1	0.5	3	1.5	13	6.5		
CLINICAL VARIABLES								
Duration of illness								
Below 5 years	1	0.5	22	11.0	64	32.0	χ^2=6.185 *df*=2	p=0.045 S*
More than 5 years	0	0	15	7.5	98	49.0		
Type of Medication								
Oral hypoglycemic	1	0.5	30	15.0	67	33.5	χ^2=20.067 *df*=2	p=0.0001 H.S***
Insulin	0	0	2	1.0	26	13.0		
Oral hypoglycemic and insulin	0	0	6	3.0	69	34.5		
Co-morbid illness								
Cardiovascular disease	0	0	11	5.5	39	19.5	χ^2=13.957 *df*=6	p=0.030 S*
Respiratory disease	0	0	1	0.5	6	3.0		
Others	1	0.5	2	1.0	11	5.5		
Nil	0	0	23	11.5	106	53.0		

Table 7. Association of level of depression among patients with diabetes mellitus with their selected demographic variables

Variables	Level of depression								χ^2	p value
	Mild		Moderate		Severe Depression		Very severe depression			
	n	%	N	%	N	%	n	%		
Demographic variables										
Age in years										
30 – 40 yrs	0	0	3	1.5	6	3.0	7	3.5	χ^2=19.345 *df*=9	p=0.022 S*
41 – 50 yrs	0	0	8	4.0	11	5.5	23	11.5		
51 – 60 yrs	0	0	10	5.0	17	8.5	37	18.5		
61 – 70 yrs	2	1.0	9	4.5	6	3.0	61	30.5		

Variables	Levels of depression								χ^2	p value
	Mild		Moderate		Severe depression		Very severe depression			
	n			%	n	%	n	%		
Gender										
Male	2	1.0	23	11.5	25	12.5	66	33.0	χ^2=8.250 *df*=3	p=0.041 S*
Female	0	0	7	3.5	15	7.5	62	31.0		
Educational status										
Primary education	1	0.5	11	5.5	15	7.5	33	16.5	χ^2=24.538 *df*=9	p=0.004 H.S***
Secondary education	1	0.5	7	3.5	8	4.0	20	10.0		
Graduation	0	0	6	3.0	4	2.0	4	2.0		
Illiterate	0	0	6	3.0	13	6.5	71	35.5		
Place of living										
Urban	1	0.5	11	5.5	12	6.0	16	8.0	χ^2=13.333 *df*=3	p=0.004 H.S***
Rural	1	0.5	19	9.5	28	14.0	112	56.0		
Unemployee	2	1.0	9	4.5	17	8.5	62	31.0	χ^2=28.880 *df*=9	p=0.0001 H.S***
Self earning	0	0	1	0.5	1	0.5	5	2.5		
Coolie	0	0	9	4.5	7	3.5	50	25.0		
Private sector	0	0	11	5.5	15	7.5	11	5.5		
Government sector	-	-	-	-	-	-				
Monthly income										
Less 5000	16	8.0	21	10.5	35	17.5	53	31.5	χ^2=23.739 *df*=9	p=0.005 H.S***
5000 – 10,000	2	1.0	13	16.5	20	10.0	25	12.5		
More than 10,000	0	0	6	3.0	5	2.5	4	2.0		
Duration of illness										
Below 5 years	0	0	18	9.0	21	10.5	48	24.0	χ^2=8.056 *df*=3	p=0.045 S*
More than 5 years	2	1.0	12	6.0	19	9.5	80	40.0		
Type of diet									χ^2=51.558 *df*=6	p=0.0001 H.S***
Vegetarian	1	0.5	0	0	1	0.5	1	0.5		
Non-vegetarian	0	0	0	0	0	0	0	0		
Mixed	1	0.5	30	15.0	39	19.5	127	63.5		

Variables	Levels of depression								χ^2	p valve
	Mild		Moderate		Severe depression		Very severe depression			
	n			%	n	%	n	%		
Family type										
Nuclear family	2	1.0	21	10.5	33	16.5	60	30.0	χ^2=19.751 *df*=6	p=0.003 H.S***
Joint family	0	0	9	4.5	7	3.5	67	33.5		
Broken family	0	0	0	0	0	0	1	0.5		
Physical activity										
Never	2	1.0	22	11.0	30	15.0	122	61.0	χ^2=23.366 *df*=6	p=0.0001 H.S***
Occasional	0	0	7	3.5	10	5.0	6	3.0		
Daily	0	0	1	0.5	0	0	0	0		

**p<0.05, H.S – Highly Statistically Significant, S – Significant, N.S – Not Significant*

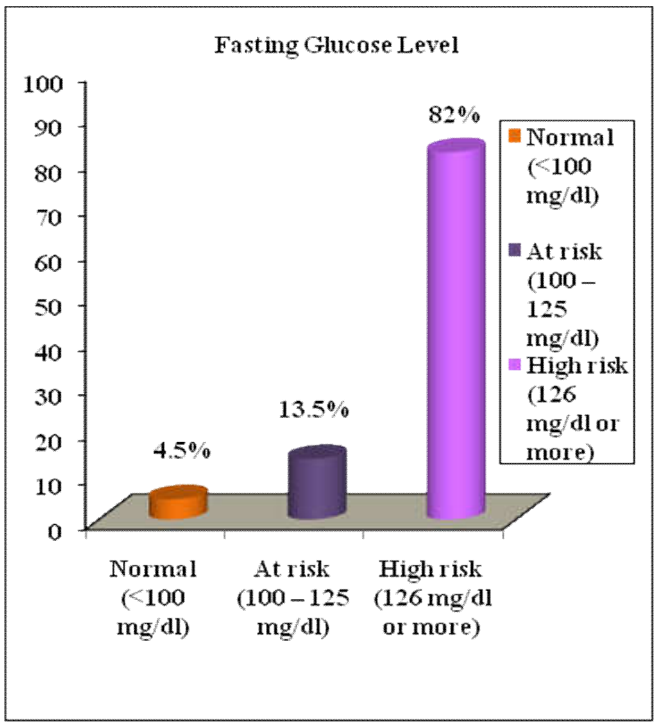

Figure 1: Percentage distribution of fasting glucose level among patients with diabetes mellitus

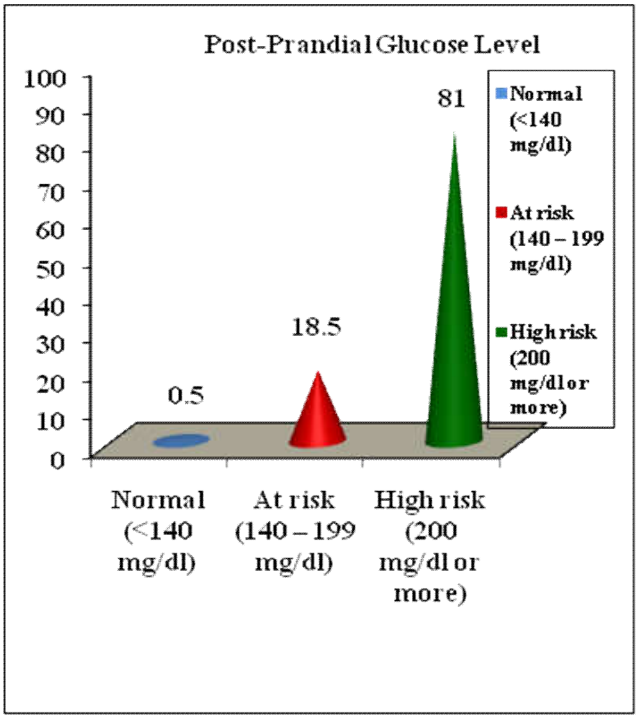

Figure 2. Percentage distribution of post-prandial glucose level among patients with diabetes mellitus

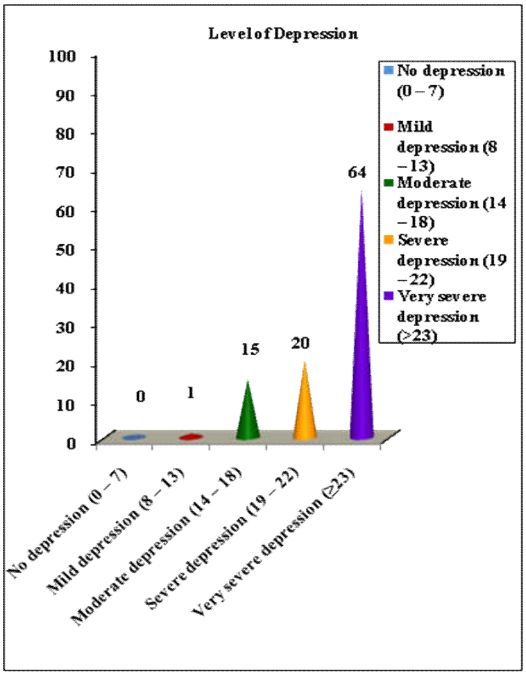

Figure 3. Percentage distribution of level of depression among patients with diabetes mellitus

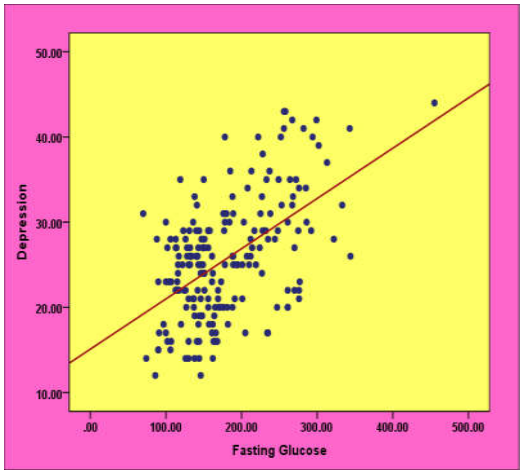

Figure 4.1. Scatterdot diagram showing the correlation between depression and fasting glycemic level among patients with diabetes mellitus

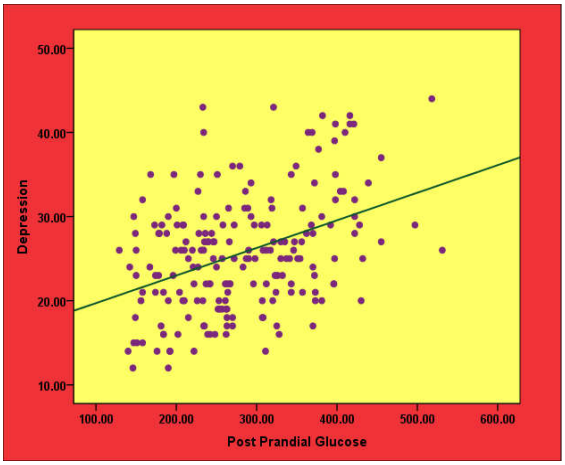

Figure 4.2: Scatterdot diagram showing the correlation between depression and Post-prandial glycemic level among patients with diabetes mellitus

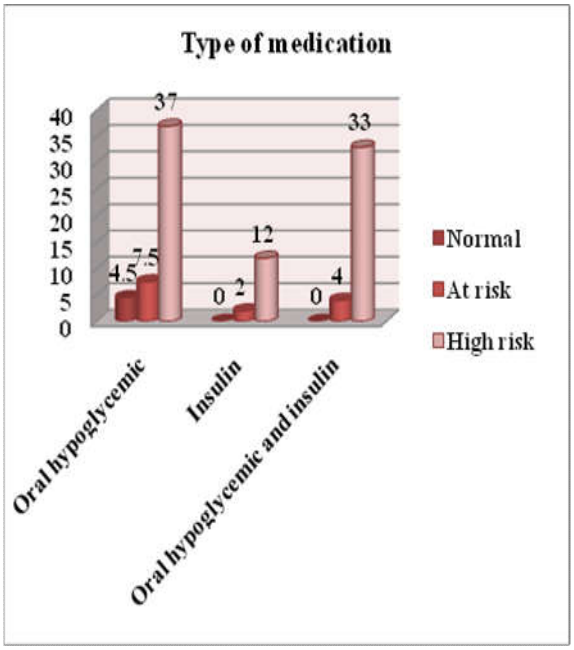

Figure 5. Association between the type of medication for diabetes with fasting glycemic level among patients with diabetes mellitus

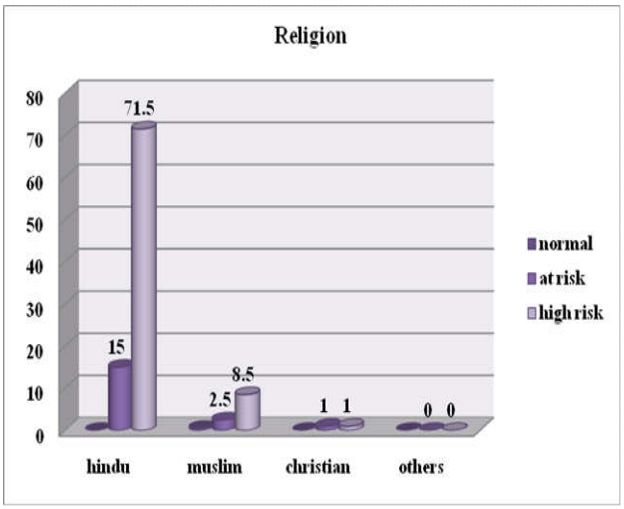

Figure 6.1. Association between the religion with post – prandial glycemic level among patients with diabetes mellitus

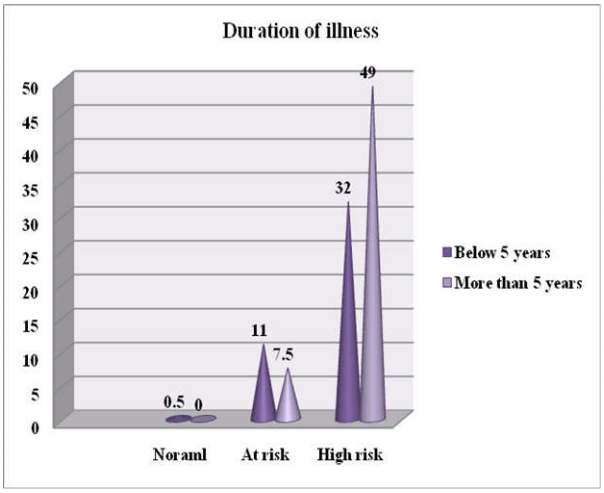

Figure 6.2. Association between the duration of illness with post – prandial glycemic level among patients with diabetes mellitus

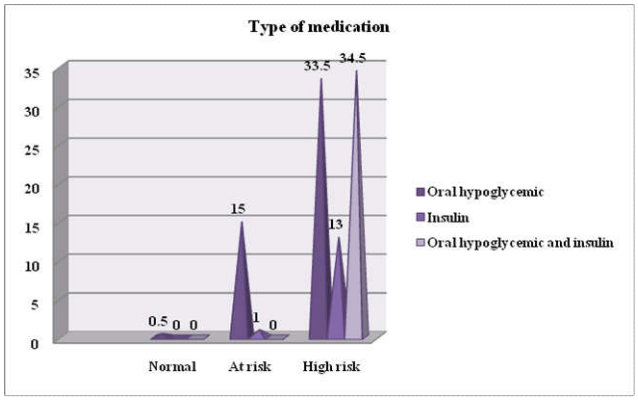

Figure 6.3. Association between the type of medication with post – prandial glycemic level among patients with diabetes mellitus

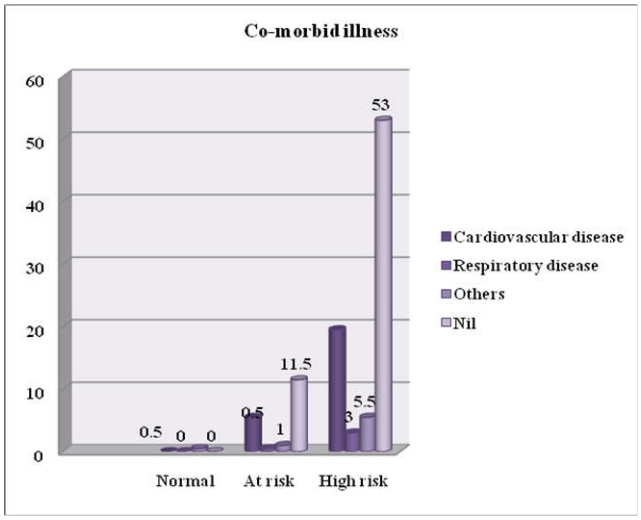

Figure 6.4. Association between the co-morbid illness with post – prandial glycemic level among patients with diabetes mellitus

Table 6 and Figure 6.4 shows that the proportion of high risk fasting glycemic level was high around (53%) among absence of co-morbid illness, (19.5%) among cardiovascular disease, (5.5%) among others, (3%) among respiratory disease; at risk fasting glycemic level was high around (11%) among absence of co-morbid illness, (5.5%) among, (1%) among others, (0.5%) respiratory disease; normal fasting glycemic level exist around (1%) among other co-morbid illness in diabetes mellitus patients. The association between the type of medication under clinical variable was found significant chi-square value is 13.937 and p value = 0.030. Table 7 shows that the demographic variables educational status, place of living, occupational status, monthly income, type of diet, family type and physical activity had shown statistically highly significant association with level of depression at $p<0.001$ level.

The demographic variables age in years and gender and the clinical variable duration of illness had shown statistically highly significant association with level of depression at $p<0.05$ level and the other demographic and clinical variables had not shown statistically significant association with level of depression among patients with diabetes mellitus.

Implications: The investigator has derived the following implications from the study which are primary concern in the field of nursing practice, nursing education, nursing administration and nursing research.

Conclusion

Thus the study findings clearly reveal that the diabetes mellitus patients prone to develop depression and the awareness programme could not control the prevalence rate of developing depression among diabetes mellitus patients and more focus should be given for the male gender, illiterate, unemployed, mixed diet and poor physical activity among patients with diabetes mellitus patients. The information booklet will be effective for the patients with diabetes mellitus in order to minimize the depressive symptoms and promote the well being of diabetes mellitus patients.

Conflict of interest: Nil

Source of funding: No funding was received for the study.

Acknowledgement: I would like to extend my gratitude Prof. Dr. R. Danasu Principal, SMVNC, Puducherry, Miss. V. Sandhiya, Lecturer in Nursing, Dept of MHN, SMVNC, and Mr. Venkataraman, Biostatistics, for their consent support and valuable suggestions.

Ethical clearance: Ethical clearance has been obtained from institutional ethical committee before conducting the study.

REFERENCES

Dr. Bimla Kapoor, 2005. "Text book of Psychiatric Nursing" Volume: 1, Kumar Publishing House Publication.

Dr. Lalitha, K. 2000. "Textbook of mental health and psychiatric nursing" 2nd edition. Bangalore Gajanana Publication.

Polit & Beck. 2001. "Nursing research generating and assessing evidence for nursing practice". 9th edition Lippincott Williams and Wilkins Publisher. Townsend,

M.C. 2006. "Text book of Psychiatric mental health nursing" 5th edition, Davis Company publication

Verghese M. 2011. "Text book of Essential of Psychiatric & Mental Health Nursing" 3rd edition Elsevier Publication

****