

A Study on Quality of Life and Depression among Type-2 Diabetes Mellitus Patients Attending OPD of SVIMS, Tirupathi, AP

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Abstract

Objective: To explore the relationship of depression with quality of life among type 2 Diabetic patients in comparison with healthy individuals (controls). **Methodology:** the present study was case control study. The data was collected from SVIMS Endocrinology OPD in Tirupathi. during the period of January 2016 to July 2016. There were 300 participants including 150 type 2 DM patients, whilst for a comparative assessment a group of 150 healthy individuals (age and gender matched) were also selected as a control to meet the purpose of the study. Subjects age range was set between 35-65 years. The study comprised of type 2 DM patients. While inclusion criteria the type 2 DM patients with duration of 5 years and above attending OPD SVIMS, were selected as a cases and healthy individuals (controls) were selected from the hospital staff. Sample was selected by simple random sampling technique using random number generated in MS excel. Beck depression inventory (BDI-II) developed by Aeronbeck in 1996 and WHO quality of life scale (QOL BREF) by Frisch 1994 were used for data collection. The data was interpreted through SPSS-20. **Results:** the study findings showed that significant but negative relation between depression scores and quality of life. Good quality of life was negatively correlated in comparison to the depression in diabetic patients ($\gamma = -0.617^{**}$, $p < 0.01$). It was also identified that there was significant difference among gender and residence with respect to mean scores of Quality of Life at $p < 0.05$ level, educational status, occupational status and monthly income at $p < 0.01$ level and there were also significant difference among educational status, occupational status and monthly income with respect to mean scores of depression at $p < 0.01$ level and with regard to residence and living status at $p < 0.05$ level. n observed linking depression and sub-scales of quality of life indicating that high depression scores may lead to lower physical and psychological health impacting social relationship and environmental health.

Keywords: Quality of life; Depression; Diabetes mellitus; Out-patient.

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INTRODUCTION

Diabetes Mellitus (DM) is a chronic disease of metabolic disorder characterized by hyperglycaemic condition resulting from defects in insulin secretion, insulin action or both.¹ Type 2 DM is a common non-communicable disease. Prevalence increases with obesity. It is the predominant form of diabetes worldwide.² Globally 382 million

people had DM in 2013. This number is expected to raise to 592 million by 2035. Most of the people with DM live in low and middle income countries.³ WHO reported prevalence of DM among adults over 18 yrs of age has risen from 4.7 per cent in 1980 to 8.5 per cent in 2014. In 2012, an estimated 1.5 million deaths were directly caused by DM and another 2.2 million deaths are attributable to high blood glucose.⁴ In North India, prevalence of type 2 DM in urban areas was 18.7 per cent and in rural area was 9.1 percent.⁶ A study done in South India reported prevalence of DM was 12.11 percent.⁵

Depression is commonly found as a comorbid condition in DM particular.⁶ Globally, an estimated 350 million people of all ages suffer from depression. At its worst, depression can lead to suicide. Over 8,00,000 people die due to suicide every year.⁷ In a review of 48 published articles representing 15 countries estimates the comorbid depression among people with DM was lowest (2%) in Brazil, highest (84%) in India.⁸ In Northern India depression among patients with DM was found 41 percent.⁴ A study in Southern India showed the prevalence of depression in patients with DM was 49 percent.⁹ The co-occurrence of the two dreaded diseases, namely depression and diabetes, as the two are frequently encountered together in routine clinical practice. Since two illnesses may affect each other.¹⁷ Any one can encounter depression at some time in life, that evidence claims that diabetic clients have more chances to experience depression.¹⁰

The quality of life (QoL) in diabetic patients is defined as their subjective perception about life in terms of cultural characteristics, social beliefs and values, personal goals and expectations, patterns and concerns. It is well known that Quality of Life is multi dimensional. Increasingly QoL assessment has been employed to evaluate outcome among patients with chronic medical conditions, and such chronic illnesses typically are associated with decreased QoL.¹¹

Measuring the impact of chronic disease on QoL of the patient is important because physiological measurements and laboratory parameters do not provide sufficient insight into the patient's psychological status and satisfaction, which in the perception of the patient may be more important than objective indicators.¹²

Based on the various study findings, this study was proposed to examine correlation between depression with quality of life and to identify the

association between depression and quality of life in relation to selected socio-demographic variables.

METHODOLOGY

The subjects were approached individually after ethical permission obtained from the institution of Sri Venkateswara Institute of Medical Sciences, Tirupati. Hospital authority's permission were taken for data collection from the patients attended to endocrinology OPD for comparison age and gender matched healthy individuals as a control included in the study. Simple random sampling technique was chosen by using random number generated in Ms excel. Informed consent was taken from the sample to collect the data and confidentiality of the subjects was maintained. In order to check the hypothesis appropriate statistical analysis was used by SPSS package 20 version.

MEASURES

Sample demographics

Sample demographics includes age, gender, religion, marital status, educational status, occupational status, family type, living status, residence, monthly income anthropometric (BMI), duration of the diabetes, diabetic parametric, type of diet, hospitalization and type of therapy were collected through a separate data sheet.

DEPRESSION

Beck depression inventory II (BDI-II) scale was developed by Aron T beck in 1996. BDI-II is used for measuring depression. It is comprised on 21 items with scoring on Likert scale ranging from 0-3. It is used as self-report measuring of depression. The range of score 1-16 has low depression, range from 17-30 has moderate depression, 31-40 has severe depression and >40 has extreme depression.

Quality of Life Scale

Quality of life of the subjects was evaluated through WHO QOL BREF. The WHO QOL scale contains 26 items. Items 3, 4, 10, 15, 16, 17 and 25 represent physical health, items 5, 6, 7, 11, 18 and 26 are representative of psychological health, items 19, 20, 21 are indicative social health, items 8, 9, 12, 13, 14, 22, 23 and 24 + 1 and 2 reflect the environmental health of the subjects.

DATA ANALYSIS

Total scores of all the participants on QoL and BDI-II were analysed via SPSS 20.

The study was conducted on 300 individuals, including 150 type II diabetic patients and for the comparative assessment a group of 150 healthy individuals (age and gender matched) were selected. The respondent was obtained. Guidelines of scale items were explained to participants. While

RESULTS

Table 1: Distribution of overall QoL, b Anxiety and Depression in type 2DM patients and healthy controls. n=300

Variables		Patients n=150		Controls n=150	
		f	%	F	%
Overall QOL	Poor	98	65.3	7	4.7
	Moderate	34	22.7	28	18.6
	Good	18	12.0	81	54.0
	Very Good	0	0.0	34	22.7
Depression	Low	41	27.3	112	74.0
	Moderate	23	15.3	29	19.3
	Significant	86	57.3	9	6.0

queries were encouraged regarding unclear items. Participant's age ranges from 35-65 years. The results

demonstrate the negative co-relation between QOL and BDI-II and significant difference among type-II

Table 2: Distribution of QoL domain scores in type 2 DM patients and healthy controls. n=300

Variables		Patients n=150		Controls n=150	
		f	%	t	%
Physical domain	Poor	92	61.3	11	7.3
	Moderate	42	28.0	28	18.7
	Good	16	10.7	78	52.0
	Very good	-	-	33	22.0
Psychological domain	Poor	90	60.0	6	4.0
	Moderate	44	29.3	33	22.0
	Good	16	10.7	86	57.3
	Very good	-	-	25	16.7
Social domain	Poor	110	73.3	16	10.7
	Moderate	30	20.0	33	22.0
	Good	6	4.0	85	56.6
	Very good	4	2.70	16	10.7
Environmental domain	Poor	54	36.0	12	8.0
	Moderate	80	53.3	24	16.0
	Good	15	10.0	83	55.3
	Very good	1	0.7	31	20.7

diabetic patients and healthy individuals.

A majority of the patients had poor quality of life (65.3%) while among controls, (4.70%) had poor quality of life. Similarly, majority of the patient

group (57.3%) had significant levels of depression while only (6.0%) among controls showed such significant level of depression.

Above table shows majority of the patients had poor

Table 3: Correlation between overall QoL, its domains and depression among type 2 DM patients and healthy controls.

n=300

Scales	Depression score			
	Patients n=150		Healthy controls n=150	
	□	P	□	P
Overall QoL	-.617**	0.00	-.604**	0.00
Physical health	-.587**	0.00	-.547**	0.00
Psychological health	-.567**	0.00	-.558**	0.00
Social health	-.448**	0.00	-.587**	0.00
Environmental health	-.548**	0.00	-.605**	0.00

scores in physical domain (61.3%), psychological domain (60.0%) and in social domain (73.3%). In environmental domain majority of the patients (53.3%) were had moderate scores. Where as in controls majority were had good scores in physical domain (52.0%), psychological domain (57.3%),

and social domain (56.6%) and in environmental domain (55.3%).

****correlation is significant at the 0.01 level (2 tailed)**

***correlation is significant at the 0.05 level (2 tailed)**

Table shows that significant negative correlation

Table 4: Mean, standard deviation and t-test of overall QoL, its domains and depression in type2 DM patients and healthy controls.

n=300

Variables	Patients n=150		Controls n=150		t-value	P
	M	SD	M	SD		
Overall QoL	57.27	12.91	90.92	17.80	18.73	0.000
Physical health	14.97	4.21	23.92	5.47	15.88	0.000
Psychological health	13.63	3.53	21.23	4.35	16.59	0.000
Social health	6.24	2.22	9.97	2.44	13.84	0.000
Environmental health	18.38	4.33	28.07	5.99	16.04	0.000
Depression	31.73	13.21	13.33	7.61	14.76	0.000

was found between overall QoL and depression among type 2 DM patients as well as controls. A very significant inverse correlation has been observed linking depression and subscales of QoL indicating that high depression scores may lead to lower physical and psychological health impacting social relationship and environmental health. Results are statistically significant.

The mean quality of life score was found to be

significantly lower in patient group (57.2%) compared to that in control group (90.9%) ($p < 0.01; S$). All the sub domains of quality of life like physical health, psychological health, social health and environmental health were found to be significantly lower in patients group compared to control group ($p < 0.01; S$). The mean depression score was found to be significantly higher in patient group (31.7%) compared to that in control group (13.3%) ($p < 0.01; S$).

Table 5: Association of QoL with socio-demographic variables of type 2 DM patients

Variables	Poor		Moderate		Good		χ ²	p value	
	n	%	n	%	n	%			
Gender	Male	43	62.3	22	31.9	4	5.8	9.064	df=20.011
	Female	55	67.9	12	14.9	14	17.2		
	Illiterate	19	95.0	0	0.0	1	5.0		
Educational status	Upto 10th	55	77.5	10	14.0	6	8.5	39.696	df=80.000
	Inter	5	38.5	5	38.5	3	23.0		
	Degree	13	32.5	19	47.5	8	20.0		
	Professionals	6	100	0	0.0	0	0.0		
Occupational status	Govt. employee	6	16.7	19	52.7	11	30.6	53.206	df=80.000
	Private employee	12	75.0	2	12.5	2	12.5		
	Daily wage	19	90.5	2	9.5	0	0.0		
	Self employee	8	100.	0	0.0	0	0.0		
Residence	Housemaker	53	76.8	11	16.0	5	7.2	6.574	df=20.037
	Urban	72	63.1	24	21.1	18	15.8		
	Rural	26	72.2	10	27.8	0	0.0		
Monthly income	Below 10000	60	84.5	5	7.0	6	8.5	46.625	df=80.000
	10000-20000	16	59.2	4	14.8	7	26.0		
	20000-30000	8	50.0	6	37.5	2	12.5		
	30000-40000	6	46.1	4	30.8	3	23.1		
	Above 40000	8	36.3	15	68.1	0	0.0		

The data presented in the above table revealed that there was a statistically significant association of gender and residence with respect to QoL at p<

0.05 level, educational status, occupational status and monthly income at p<0.01 level

Table 6: Mean, SD and t- value or f-value of depression among demographic variables in patients

n=150

Demographic variables	N	Mean	SD	f-value	t-value	p-value	Sig
LIVING STATUS							
With family	142	30.92	13.08	-	3.26	-	P< 0.01
Alone	8	46.13	4.48				
RESIDENCE							
Urban	114	30.19	13.26	-	2.57	0.01	P< 0.05
Rural	36	36.58	11.98				
PPBSVALUES							
Normal	29	26.21	14.06	-	0.01	-	P< 0.01
Above normal	121	33.05	12.71				

Table cont...

MARITAL STATUS							
Married	138	31.02	13.07				
Single	2	34.50	26.16				
Divorced	1	13.00	-	3.59	-	0.01	P< 0.01
Widow	9	44.00	4.27				
Total	150	31.73	13.21				
EDUCATIONAL STATUS							
Illiterate	20	37.55	13.83				
Upto 10th	71	34.66	11.97				
Inter	13	25.85	13.32	4.86	-	-	P< 0.01
Degree	40	26.33	13.30				
Professionals	6	26.33	6.77				
Total	150	31.73	13.21				
OCCUPATIONAL STATUS							
Govt. employee	36	18.92	7.77				
Private employee	16	32.38	11.18				
Daily wage	21	40.29	8.66	17.91	-	-	P< 0.01
Self-employee	8	40.00	8.60				
Housemaker	69	34.7	12.95				
Total	150	31.73	13.21				
INCOME STATUS							
Below 10,000	71	33.51	13.68				
10,000-20,000	27	33.33	13.44				
20,000-30,000	16	35.75	10.18	3.47	-	0.01	P< 0.01
30,000-40,000	13	22.08	12.43				
Above 40,000	23	27.00	10.70				
Total	150	31.73	13.21				
BMI							
Normal	38	27.71	15.26				
Above	60	31.73	12.33	3.24	-	0.04	P<0.05
norma base	52	34.79	11.98				
Total	150	31.62	13.21				
HbA_{1c}							
Normal	10	14.70	5.83				
Increased	15	31.07	15.01	10.17	-	-	P< 0.01
Higher	125	33.17	12.50				
Total	150	31.73	13.21				

Table 6 shows that significant difference among living status, residence, PPBS values, marital status, educational status, occupational status, income status, BMI and HbA_{1c} with respect to mean scores

of depression.

DISCUSSION

In present study negative correlation was observed between QoL and depression among type 2 DM patients and healthy controls. A very significant inverse correlation was observed linking depression and domains of QoL indicated that high depression scores may led to lower physical and psychological health along with impact on social relationship and environmental health. Results shows statistically significant. The values among patients and controls were for overall QoL $\gamma = -.617$, ($p=0.00$) and $\gamma = -.604$ ($p=0.00$), for physical health $\gamma = -.587$, ($p=0.00$) and $\gamma = -.547$ ($p=0.00$), for psychological health $\gamma = -.567$, ($p=0.00$) and $\gamma = -.558$, ($p=0.00$), for social health $\gamma = -.448$, ($p=0.00$) and $\gamma = -.587$, ($p=0.00$), for environmental health $\gamma = -.548$, ($p=0.00$) and $\gamma = -.605$, ($p=0.00$) respectively.

Findings of the present study suggests that quality of life negatively correlates with depression in diabetic patients it was consistent with the previous research findings which shows negative correlation between quality of life and ambivalence over depression.^{13,14} The evidences of the study at hand were also in line with previous researchers studied that depression and psychological wellbeing correlation among other quality of life factors.^{15,16} Furthermore, it was found that there were significant differences in quality of life and depression scores among diabetic patients and healthy individuals.

Among patients group, significant association was identified between the level of overall QOL and demographic variables like gender, FBS and residency at $p<0.05$ level, educational status, occupational status, monthly income, BMI, HbA1c, and PPBS at $p<0.01$ level. Kumar R et al. (2016)¹⁷ identified among 60 patients that there was significant association between QOL and demographic variables such as gender, blood glucose levels (FBS, PPBS) and HbA1c level. Another study done by Mathew A et al (2014).¹⁸ shows among 100 type 2 DM patients the association exists between QOL and selected demographic variables like occupation and monthly income at $p<0.05$ level. Saleh F (2015).¹⁹ reported that age, female gender, income, education, family history and duration of DM, and prescribed treatment were important factors associated with the HR-QoL among type 2 diabetes. Present study indicates female gender, lower education, house makers/unemployment, residence, low income, above normal BMI, higher HbA1c level, above normal levels of FBS and PPBS

were significantly associated with lower QoL. Javanbakht M et al (2012).²⁰ among 3472 subjects reported similar results which is consistent with present study results.

In patients' group, identified association between depression and demographic variables like educational status, occupational status, monthly income, residency, living status, BMI and HbA1c. Swarnalatha N (2013)²¹ shows among 400 patients that marital status was associated with socio-demographic variables. More prevalence of widowhood than among the male counter parts, living alone, poor status in the family, increased physical dependency, lack of income and poor health might be the reasons for increased prevalence of depression among elderly females or patients.²²

Along with association of dependent variables like overall QOL, its domains and depression with socio-demographic variables the researcher paid attention to test the difference between groups of socio-demographic variables by extending statistical analysis of t-test and ANOVA.

IMPLICATIONS

Present research has depicted evidences that may be indicative of an association linking depression and QOL among type 2 DM patients and lays foundations for future researchers to explore other variables in this regard. Current study may be accessed literature for future references. The study may provide support for future studies that may not only replicate the results of present study that also may make improved investigation with more resourceful thoughts on the subject matters. The current study will create interest and would suggest nurses and other health professionals (psychologist) may unlock the door ways to formulate further innovations regarding the phenomenon and to identify their role to counsel/ guide the type 2 diabetic patients in recognition of alternative measures to be identified/ followed for the improvement of quality of life which enhance the longevity.

CONCLUSION

The findings of the present study suggest that majority of type 2 DM patients belongs to low socio-economic status and illiterates comparative to controls. Overall QoL, its domains score were low and depression scores were high in type 2 DM patients. Which is observed in reverse manner i.e., Overall QoL its domain scores were high,

depression scores were low in controls.

Negative correlation was found between QoL and depression, positive correlation was found between inter domains of QoL and depression among type 2 DM patients and controls.

Regression analysis has shown the relative contributing variables such as gender, monthly income, FBS, occupational status, HbA1c and PPBS were found to be influencing QoL in patient group. The contributing variables such as educational status, family type, residence, occupational status were found to be influencing QoL in controls.

Regarding depression the relative contributing variables such as gender, occupational status and DDM were found to be influencing depression in patient group. The contributing variables such as marital status, family type were found to be influencing depression in controls.

Present study suggest that among all other predictors, HbA1c was most common predictor of QoL and duration of diabetes was common predictor of depression.

RECOMMENDATIONS

- Early recognition of vulnerable factors associated with QoL and depression in people with diabetes is necessary to promote patient adherence and compliance to diabetes control.
- Collaborative team work between health care providers and patients through a compassionate and holistic approach in recognising early psychiatric features is essential to prevent disease co-morbidities and mortalities.
- Rejuvenating primary health care policies from an essentially 'reactive based system' (responding only when individuals are sick) to a 'proactive based system' (focus on overall mental physical health wellbeing) needs to be drafted immediately and amalgamated in all public health facilities.
- Increasing patient awareness to boost self-determination and confidence through integrated psychological and medical care in the management of diabetics would catalyse optimal health outcomes.

Scope for Further Research:

- Similar study can be conducted to see the effectiveness of STP on improvement of QoL

among type 2DM patients.

- Community based studies on prevalence of depression among people with diabetes may be conducted.
- A comparative study to assess the depressed and non-depressed patients.
- Same study should conduct with large sample with longitudinal period.
- A study on prevalence and associated factors with depression among rural, urban and tribals.
- A study on knowledge, attitude and practices to develop new innovative approaches in prevention and control of depression among type 2 DM patients.
- Investigate the effectiveness of strategies to improve QoL diabetic patients.

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