

Relationship between Quality of Life and Depression among Type 2 Diabetic Patients of Tirupati

M. Sree Latha*, P. Sudharani**, Alok Sachan**

*Ph.D Scholar in Nursing, **Professor, College of Nursing, Sri Venkateswara Institute of Medical Sciences (SVIMS), Alipiri Road, Tirupati-517507 Andhra Pradesh.

Abstract

Objective: To explore the relationship of quality of life and depression in type 2 diabetic patients in comparison with healthy individuals (controls). *Methodology:* The present study was case control study. The data was collected from SVIMS Hospital in Tirupati, during DEC 2016 to JAN 2016. There were 80 participants including 40 type 2 DM patients whilst for a comparative assessment a group of 40 healthy individuals (age and sex matched) were also selected as a controls to meet the purpose of the study. subjects age range was set between 35-65 years. The study sample comprised of type 2 DM patients. While inclusion criteria the type 2 DM patients with duration of 5 years and above attending OPD, were selected as a cases and healthy individuals were selected as a controls. Sample was selected by simple random sampling technique using random number generated in Ms excel. WHO quality of life scale (QOL BREF) by Frisch 1994 and Beck depression inventory (BDI-II) developed by Aeron Beck in 1996 were used for data collection. The data was interpreted through SPSS-20. *Results:* The study findings showed a significant but negative between quality of life and depression scores. Good quality of life was negatively correlated in comparison to the depression in diabetic patients ($r=0.567^{**}$ $p<.01$). It was also discovered that there were significant differences present in depression and quality of life scores of diabetic people and healthy individuals. It was also identified that there was significant difference among educational status, occupational status and type of diet, marital status, living status, monthly income with respect to mean scores of QOL at $p<0.05$ level and there were significant difference among education status, occupational status and type of diet with respect to mean scores of depression at $p<0.05$ level. *Conclusion:* Higher depression scores in BDI scores and lower scores of quality of life scores were seen in majority of the type 2 DM patients during the study.

Keywords: Diabetes Mellitus (DM); Type 1 Diabetes Mellitus; Type 2 Diabetes Mellitus.

Introduction

Diabetes Mellitus (DM) is a chronic somatic disease of endocrine system [1]. It is known to be the most common debilitating and a permanent health problem [2]. Type 2 DM is increased markedly by since 1960 in parallel with obesity [3]. The global prevalence of diabetes is currently estimated to be

285 millions [4] and 366 millions were estimated to have DM in the year of 2011 world wide [5] and projection rates are expected to rise to over 438 millions by the year of 2030 [4]. DM has caused approximately 4.6 million deaths in all age groups. 20-79 years accounting for approximately 8.2 % of mortality. 80 per cent of diabetic deaths occur in low and middle income countries [5]. In adults 90 per cent have Type 2 Diabetes Mellitus, only 10 per cent have Type 1 Diabetes Mellitus reported [6]. Type 2 DM results from insulin resistant sometimes combined with an absolute insulin deficiency also referred as non insulin dependent DM and adult on

Reprint Request: M. Sree Latha, Ph.D Scholar in Nursing, College of Nursing, Sri Venkateswara Institute of Medical Sciences (SVIMS), Alipiri Road, Tirupati-517507 Andhra Pradesh.

E-mail: mynampatisreelatha14@gmail.com

set diabetes [7]. The symptoms of type 2 DM includes the patients suffering from recurrent urinations, fatigue, dryness of mouth, impotence, numbness, repeated skin infections, pain or cramps, an intense itching, drowsiness, and cuts, bruises taking more time to heal or cure than normally. Diabetes can even be caused due to heavy stress or tensions, obesity smoking, aging and poor diet. Studies shown close connection between diabetes and depression [2].

The prevalence of depression is two times more common in people with diabetes than in those with out diabetes mellitus [8]. Depression may have special clinical relevance in diabetes. Since two illnesses may affect each other [9]. Any one can encounter depression at sometime in life. But evidence claims that diabetic people have more chances to experience depression [2] co morbid depression is often undiagnosed and untreated [10] and it associated with wide range of negative consequences includes significant worsening of medical conditions. High mortality risk related to suicide and socio economic burden resulting from functional impairment [11]. Diabetes double the chances of depression in its patients compared to healthy people. Depression leads to decreased physical and mental performances. Diabetic people with a history of depression may be more expected to encounter complications due to diabetes comparison to those diabetic sufferers who don't have depression [2]. It is important to study about the fundamental issues that are linked to quality of life as they may strongly predict an individuals ability to handle and control his condition and sustain long term health related comforts [2,12]. Poorer QOL for diabetic patients with evaluate in respect to healthy population especially concerning physical, psychological and environmental wellbeing, as well as social relationships may be harshly impacted. Adjustment with the disease is usually escorted by a range of disappointing reactions, that include rage, self blame, mental disturbance defiance and isolation. Diabetes is also known to have connections with impaired QOL including decreased social, cognitive and physical functioning along with diminished emotional wellbeing and general health perceptions [2].

Methodology

After ethical permission obtained from the institution of sri ventakeswara institute of medical sciences, Tirupati. the subjects were approached individually with the permission of hospital authorities. The data was collected from patients

attending endocrinology OPD and for comparison age and gender matched healthy individuals included in the study. The sample was selected by simple random sampling technique using, random number generated in Ms excel. After obtaining the informed consent the data was collected and confidentiality of the subjects was maintained. In order to check the hypo thesis appropriate statistical analysis was used by SPSS package 20 version.

Measures

Patient Demographics

Demographics of patients including age, gender, religion, marital status, educational status, occupational status, family type, living status, residence, monthly income, anthropometrical (BMI), duration of diabetes, diabetic parameters, type of diet, hospitalization, type of therapy, were collected through a separate data sheet.

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 & 2 reflect the environmental health of the subjects.

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.

Data analysis

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

Results

The study was conducted on 80 individuals including 40 type 2 diabetic patients and for the comparative assessment a group of 40 healthy

individuals (age and sex matched) were selected.

The respondent approval was obtained. Guidelines of scale items were explained to participants. While queries were encouraged regarding unclear items. Participants age ranged from 35-65 years. The results demonstrate the negative correlation between QOL and BDI-II and significant

Table 1: Alpha reliability co efficient of BDI II and QOL scale (n=80)

Scales	No. of Items	Alpha Co Efficient For Cases (40)	Alpha Co Efficient For Controls (40)
BDI-II	21	.82	.81
QOL	26	.88	.90
Physical health	7	.70	.69
Psychological health	6	.69	.81
Social health	3	.46	.35
Environmental	8+2	.72	.83

NOTE: BDI-II =Beck depression inventory
QOL = Quality of life scale

difference among type 2 diabetic patients and healthy individuals.

The above table shows that Beck depression inventory II and WHO BREF quality of life scale are reliable instruments in measuring the depression and quality of life among type 2 diabetic patients and healthy individuals being social domain of quality

Table 2: Correlation between quality of life, its sub scales and depression among type 2 diabetic patients

Scales	Depression	
	r	p
Qol	-0.567**	.000
Physical Health	-0.493**	.001
Psychological Health	-0.511**	.001
Social Health	-0.326*	.040
Environmental	-0.461**	.003

**correlation is significant at the 0.01 level (2 tailed)
* correlation is significant at the 0,05 level (2 tailed)

of life scale has low reliability due to less number of items that is only 3 items

Table 2 represents significant negative connection between quality of life and depression among type 2 diabetic patients. A very significant inverse correlation has been observed linking depression and sub scales of quality of life indicating that high depression scores may be leading to lower physical and psychological health along with impacting social

Table 3: Mean, standard deviation and t- test of depression and quality of life subscales among type 2 diabetic patients and healthy individuals (n=80)

VARIABLE	Patients		Normal		t	p
	M	SD	M	SD		
Depression	38.58	5.995	7.55	4.579	26.009	0.000
Qol	54.78	7.156	96.13	7.927	24.490	0.000
Physical Health	14.50	2.651	27.30	2.399	22.646	0.000
Psychological Health	12.33	2.055	21.73	2.641	17.765	0.000
Social Health	5.43	1.375	10.33	1.575	14.819	0.000
Environmental	22.53	2.708	36.78	3.301	21.109	0.000

relationship and environmental health. Results are statistically significant.

Table 3 shows the significant mean difference between depression and quality of life sub scales (physical, psychological, social and environmental health) among type 2 diabetic patients and healthy individuals. There is significant difference among quality of life and depression in patients with type 2 diabetes and non diabetic individuals. Depression in patients (M=38.58, SD=5.995), normal (M=7.55, SD=4.599), quality of life in patients (M=54.78, SD=7.156), normal (M=96.13, SD =7.927), physical health of patients (M=14.50, SD=2.651),

normal(M=27.30, SD=2.399), psychological health of the patients (M=12.33, SD =2.055), normal (M=21.73, SD=2.641), social relationship of the patients (M=5.43, SD=1.375), normal (M=10.33, SD=1.575), environment of patients (M=22.53, SD=2.708), normal(M=36.78, SD=3.301).The results are statistically significant at 0.05 level of significance.

Table 4 shows that significant difference among educational status, occupational status, type of diet, marital status, living status, monthly income with respect to mean scores of quality of life and there were no significant difference among age, gender, family type, residence, BMI, duration of diabetes,

Table 4: Mean, SD and F value of quality of life among demographic variables in patients

Demographic Variable S	N	Mean	SD	F value	P value	Remarks
Marital Status						
Married	37	54.62	6.610	4.806	0.014	As p<0.05, there is significance
Single	1	73.00				
Widow	2	48.50	3.536			
Total	40	54.78	7.156			
EDUCATIONAL STATUS						
Up to 10 th class	26	53.50	61.79	3.806	0.018	As p<0.05, there is significance
Intermediate	5	52.80	5.263			
UG	5	55.20	5.541			
PG and above	4	65.20	10.456			
Total	40	54.78	7.156			
OCCUPATIONAL STATUS						
Government employee	11	57.18	7.768	3.490	0.025	As p<0.05, there is significance
Private employee	5	61.60	10.784			
Daily wage	4	52.00	2.828			
Home maker	20	52.30	4.889			
Total	40	54.78	7.156			
LIVING STATUS						
With family	39	54.31	6.602	2.796	0.008	As p<0.05, there is significance
Alone	1	73.00				
MONTHLY INCOME						
<=10,500	16	53.06	6.361	2.768	0.056	As p<0.05, there is significance
<10,500-<40,000	15	53.87	5.194			
<40,000-<55,000	3	54.00	7.211			
>55,000	6	62.00	10.334			
Total	40	54.78	7.156			
TYPE OF DIET						
Vegetarian	7	60.43	9.431	2.444	0.019	As p<0.05, there is significance
Non vegetarian	33	53.58	6.103			

Table 5: Mean, SD and F value of depression among demographic variables in patients

Demographic Variable S	N	Mean	Sd	F Valu	P Value	Remarks
Educational Status						
Up to 10 th class	26	40.42	4.900	2.988	0.044	As p<0.05, there is significance
Intermediate	5	36.00	4.848			
UG	5	36.00	4.743			
PG and above	4	33.00	10.614			
Total	40	38.58	5.995			
Occupational Status						
Government employee	11	34.18	6.178	4.027	0.014	As p<0.05, there is significance
Private employee	5	38.00	7.583			
Daily wage	4	38.25	1.708			
Home maker	20	41.20	4.753			
Total	40	38.58	5.995			
Type of Diet						
Vegetarian	7	33.57	7.300	2.605	0.013	As p<0.05, there is significance
Non vegetarian	33	39.64	5.213			

HBA_{1C} and type of therapy with respect to mean scores of quality of life.

Table 5 shows the significant difference among educational status, occupational status and type of

diet with respect to mean scores of depression at p<0.005 level and there were no significant difference among age, gender, family type, residence, BMI, duration of diabetes, HBA_{1C}, type of therapy, marital

status, living status and monthly income with respect to mean scores of depression.

Discussion

It is well recognized that is comparison to the general population, diabetic people have higher chances of experiencing prominent depressive symptoms and being clinically depressed even though it is uncertain that diabetes is in actually at risk factors for increased chance of encountering depressive symptoms, the evidence promote that has been given verdict of diabetes or the burdens of dealing with its complications may also bring about depressive symptoms in diabetic patients [2,13].

Findings of the present study suggest that quality of life negatively correlates with depression in diabetic patients that are also consistent with the previous research findings of who found significant negative correlation between quality of life and ambivalence over depression [2,14]. The evidences of the study at hand were also in line with previous researchers that have studied that depression and psychological wellbeing correlation among other quality of life factors [2,15]. Several evidences have verified that diabetes negatively impacts the health related quality of life [16].

The results of the study indicate that depression is negatively correlated with physical psychological and environmental health and social relationship. Further more it was found that there are significant differences in quality of life and depression scores among diabetic patients and healthy individuals. Results are consistent with previous existing data. Symptoms of depression were more common in diabetic patients as compared to healthy people [17]. Various evidences have shown that the quality of life of diabetic patients is reduced in comparison to healthy people [18].

The Incidence of DM has an added dis-advantage to negatively impacting quality of life of DM patients life in comparison with healthy people [2,19]. It was found that there was significant difference between some of demographic variables with related to quality of life and depression scores in type 2 diabetic patients. It further established that there is significant difference between other variables with related to quality of life and depression scores which was due to very small sample size.

Limitations of the Study: The sample size of the present research was not large enough to discover the purpose of research while it was bound to that is only 40 type 2 diabetic patients and only 40 healthy individuals as was not fully delegate for

generalisbility. The subject age of the present investigation was restricted that is age range was set between 35-65 years and duration of diabetes was 5 years and more. Data was taken from type 2 diabetic patients' attending OPD.

Implications

Present research has depicted evidences that may be indicative of an association linking depression and quality of life among diabetic 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 be interest and would suggest to nurses and other health professional (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.

References

1. Harrison's. Principles of internal medicine. 2012; 2: 2968-3001.
2. Akhtar B, Uzma M ,Sana D, Samia B.Realtionship between quality of life and depression among DM patients of Rawalpindi, Pakistan. International journal of rehabilitation. 2013; 2: 10-16.
3. Shehzad yopiwala, review on type 2 DM. 2012.
4. Kurubaran Ganasegeran, Pukunam Renganathan, Rizal Abdul Manaf, Sami Abdo Radman Al-Dubai. Factors associated with anxiety and depression among type-2 diabetes mellitus.Bmjopen. 2014; 4: 2044-6055.
5. Melba Sheila D'Souza, Ramesh Venkatesa perumal, SusanD. Ruppert, Subrahmanya Nairy Karkada, and Deva kirubai Jacob. Health Related Quality of Life among Omani Men and Women with Type 2 Diabetes. Journal of Diabetes Research. 2016: 1-10.
6. Lee Goldman, Dennis Ausiella. Cecil .Textbook of medicine.2004;2:1425.
7. Brunner and siddharth. Medical and surgical nursing. 2004; 19: 1150-1200.
8. Saira Joshi, Raja Ram Dhungana, and Usha Kiran Subba. Journal of Diabetes Research. 2015; 1-8.
9. Girish Banwari. Comorbid depression and diabetes mellitus: a double whammy. NHL Journal of

- Medical Sciences. 2013; 2(2): 9-13.
10. Norbert Hermannsa,™, Salvatore Caputob, Grzegorz Dzidac, Kamlesh Khuntid, Luigi F. Meneghinie, Frank Snoekf. Review Screening, evaluation and management of depression in people with diabetes in primary care. *primary care diabetes*. 2013; 7: 1-10.
 11. Carlos Tovilla-Za´rate, Isela Jua´rez-Rojop, Yesenia Peralta Jimenez, Mar´y´a Antonia Jime´nez, Silvia Va´zquez, Deysi Bermu´dez-Ocan˜a1, Teresa Ramo´n-Fr´y´as, Alma D. Genis Mendoza, Sherezada Pool Garc´y´a, Lilia Lo´pez Narva´ez. Prevalence of Anxiety and Depression among Outpatients with Type 2 Diabetes in the Mexican Population. *Journal of depression and diabetes*. 2012; 7(5): 1-6.
 12. Kronish IM, Rieckmann N, Halm EA, Shimbo D, Vorchheimer D, Haas DC, Davidson KW. Persistent depression affects adherence to secondary prevention behaviors after acute coronary syndromes. *Journal of General Internal Medication*. 2008; 21: 1178-83.
 13. Shimbo D, Davidson KW, Haas DC, Fuster V, Badimon JJ. Negative impact of depression on outcomes in patients with coronary artery disease: mechanisms, treatment considerations, and future directions. *Journal Thromb Haemost*. 2005; 3: 897-908.
 14. Umara rauf and uzma Ali. predictive relation ship between depression and quality of life among patients with type II diabetes in Karachi-Pakistan. *Journal of basic and applied sciences*. 2015; 11: 577-582.
 15. Brenner BM, Cooper ME, De Zeeuw D, Keane WF, Mitch WE, Parving HH. the Renal Study Investigators. Effects of losartan on renal and cardiovascular outcomes in patients with type 2 diabetes and nephropathy. *Journal Medical Nephropathy*. 2001; 345: 861-9.
 16. Anumol Mathew, Anusree T.K, Aparna Mathew A, ArchanaS,Athira M ,Sachina B,J,Gireesh GR. Quality of life among type 2 DM patients in south india. *American international journal of research in humanities , Arts and social services*. 2014; 7(2): 197-200.
 17. Firooze Derakshan pour, Mohammed Ali Vakil Maryam Farsinia And Kamal Mirkerimi. "Depression and QOL in patients with type 2 Diabetes. *Iranian ved crescent medical journal*. 2015; 17(5): 1-5.
 18. MhKazemi - Galougahi, HNavidi Ghaziani, H Eftekhar Ardibili, M Mahmoudi .Quality of life in type2 diabetes mellitus and related effective factors. 2012; 66(9): 230-237.
 19. Wexler DJ, Grant RW, Wittenberg E, Bosch JL, Cagliero E, Delahanty L, Blais MA, Meigs JB. *Diabetologia*. 2006 Jul; 49(7): 1489-97.
-