

**Does Type II Diabetics compromise QOL among Rural Elderly? A community Based Cross sectional study in Rural Bangalore**

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**Date of Submission** : 12-07-2018

**Date of online Publication** : 15-10-2018

**Date of Acceptance** : 15-09-2018

**Date of Print Publication** : 31-12-2018

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**ABSTRACT**

Background: According to WHO, Population aging is happening very quickly.<sup>1</sup>WHO defines QOL as ‘Individual’s perception of their position in life in context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns’.<sup>3</sup>The objectives of present study were to find out prevalence of type 2 Diabetes among elderly, to assess Quality of life (QOL) and assess factors affecting QOL among elderly Type II Diabetics. Materials and methods: It is a community based cross sectional study carried in the field practice area of MVJ Medical College and Research Hospital, Bangalore for a period of 9 months .Sample size calculated was 230 and snowball technique was used. Data collected using semi structured questionnaire and QOL was assessed using WHO QOL OLD Questionnaire after informed consent. Data were entered in Microsoft excel and analyzed using SPSS v22. To compare between various groups, independent t test was applied. Results: Among 231 study participants, 122 (48.8%) belonged to 60-65 years age group, 126 (54.5%) were females, 130(56.3%) were illiterates and 119 (51.6%) were completely dependent financially on family members, 89(38.5%) were having Diabetes mellitus. Statistically significant difference was found in SAB(Sensory Abilities) and DAD(Dead and Dying) domain where Non-Diabetics had higher scores. Conclusion: Old age itself compromises QOL which is added with burden of Type II Diabetes among this age group.

**Key-words:** Old age, QOL, Elderly, Diabetics

**INTRODUCTION**

Aging is normal and physiological process. Population aging is shift in age distribution of a population towards older age. Population aging has been growing concern to both developed and developing countries. According to WHO, Population aging is happening very quickly moving from 12 percent to 22 percent globally.<sup>1</sup>India has witnessed this demographic transition and reached demographic aging attributed to higher reduction in mortality, better educational status, decline in fertility and better health care facilities. This elderly age group is vulnerable to medical problems like impairment of special sensory functions like vision and hearing, impaired physical mobility, more prone for non – communicable diseases, psychological impairment because of lack of family support, economic insecurity, social isolation and elderly physical abuse contributed with rapid urbanization, modernization, upward trends of nuclear family and decreasing family traditions.<sup>2</sup>

World Health Organization (WHO) defines Quality of Life (QOL) as Individual’s perception of their position in life in context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns’.<sup>3</sup> The quality of life of elderly people has become relevant with the

demographic shift and quality of life should include factors other than health.<sup>4</sup>The concept of quality of life encompasses satisfaction and wellbeing, containing subjective and multi-dimensional characteristics.<sup>5</sup>Of all the diseases, type 2 diabetes mellitus (T2DM) is the single most disease affecting a large number of elderly populations. The prevalence of type II Diabetes mellitus is increasing in alarming rate and it is also becoming a huge epidemic of social, economic, physical and emotional burden. DM in elderly includes two groups which are “survivors” of young or middle age onset of diabetes and incident diabetes in older age or type 2 DM.<sup>6</sup> Elderly patients with diabetes have a higher incidence of depression and impaired cognitive function when compared with age-matched controls without diabetes.<sup>7</sup> Diabetes and its complications take a major toll on the quality of life of the elderly and the healthcare costs of the society. The management of diabetes in elderly requires special care and attention.<sup>8</sup> With this above back ground, the study was started with the objective to find out prevalence of Type II Diabetes among elderly, to assess Quality of life (QOL) among Type II Diabetes in elderly and assess factors affecting QOL among same participants.

## MATERIAL AND METHOD

It is a community based cross sectional study done in UHTC, field practice area MVJ Medical College and Research Hospital, Hoskote, Bangalore Rural for a period of 9 months from August 2017 to March 2018. Sample size calculation considering the expected Standard Deviation (SD) of QOL score in the elderly population<sup>9</sup> to be 10.88 and tolerable error 1.5% at 95% confidence interval, the minimum sample size came out to be 201 by the formula  $(1.96^2 \sigma^2 / l^2)$ , where 'σ' is standard deviation and 'l' is allowable error. Taking 10 % as non-response rate, the final sample size was calculated as 230. Sampling technique was snowball technique. Data regarding socio-demographic profile and morbidity status was collected using semi structured questionnaire and QOL will be assessed using WHO QOL OLD (WHO Quality of Life –OLD) Questionnaire after informed consent by interview technique. The questionnaire has 24 questions and evaluates 6 domains which are SAB, AUT, PPF, SOP, DAD & INT. *Sensory Abilities (SAB)* means Sensory functioning, impact of loss of sensory abilities on quality of life, *Autonomy (AUT)* means Independence in old age; being able or free to live autonomously and to take own decisions, *Past, Present and Future Activities (PPF)* Satisfaction about achievements in life and at things to look forward to, *Social Participation (SOP)* means Participation in activities of daily living, especially in the community, *Death and Dying (DAD)* means Concerns, worries and fears about death and dying, *Intimacy (INT)* being able to have personal and intimate relationships. *Summing* the items belonging to a facet yields the *raw facet score (RFS)*. To obtain the transformed facet score (0 - 100) the following transformation rule can be applied:  $TFS = 6.25 \times (RFS - 4)$ . *Basically* high scores represent high quality of life, low scores represent low quality of life; For positively worded items, the above classification can be applied in which higher values represent a higher quality of life. For negatively worded items, the score has to be recoded. Permission was taken from World Health Organization (WHO) for the use of WHO QOL OLD Questionnaire. All those aged above 60 years were included in the study and those with other morbidities, chronically sick and beds ridden were excluded from the study. Few operational definitions were made. Participants were grouped under married and others, where others included separated, widow, widower and not leaving together. Financial status were defined into three categories which included Financial dependent who were completely dependent on family members, Financially independent who live on their own savings and pension amount without the help of other family members and partial dependent who had both pension amount and also depended on family members. Data entered in Microsoft excel and analyzed using SPSS v22. Level of significance will be defined with p value less than 0.05. To compare between various group, independent t test was applied.

Table 1: Distribution of study participants according to Socio demographic profile of study participants

Sl no	Variables	N=231	
1	Age in years	60- 65	122 (48.8%)
		66-70	53 (21.2%)
		71-75	31(12.4%)
		75- 80	14 (5.6%)
		80 and above	30 (12%)
2	Gender	Male	105 (45.5%)
		Female	126 (54.5%)
3	Education	Literate	101 (43.7%)
		Illiterate	130 (56.3%)
		partially dependent	50 (21.6%)
4	Financial dependency	completely dependent	119 (51.6%)
		completely independent	62 (26.8%)
5	Marital Status	married	119(51.6%)
		others	112(48.4%)

Table 2: Distribution of Diabetes mellitus study participants according to their morbidity profile

Diabetes mellitus (n=231)	present	89(38.5%)
	absent	142(61.5%)
Among Diabetes Mellitus(n= 89)		
Drug regimen	OHA	70(78.5 %)
	Insulin	16(18 %)
	Combination	3(3.5)
Family history of Diabetes mellitus	present	59(66.3 %)
	absent	30(33.7 %)
	less than one year	11(12.4%)
	1 to 5 years	41(46.1%)
Duration of disease	6 to 10 years	27(30.3%)
	11 years and above	10(11.2%)

Table 3: Comparison of QOL among Diabetics and Non Diabetics

	DM	n	Mean (Std. deviation)	p value*	TFS	P value*
SAB	present	89	13.6 ± 2.2	0.01	60.3±13.8	0.01
	absent	142	16.0 ± 2.3		75.1±14.8	
AUT	present	89	14.4 ± 3.0	0.36	65.5±18.8	0.36
	absent	142	14.1 ± 3.1		63.16±19.4	
PPF	present	89	14.5 ± 2.3	0.78	66.0±14.8	0.78
	absent	142	14.4 ± 1.9		65.5±12.3	
SOP	present	89	13.3 ± 3.0	0.54	58.35±18.9	0.54
	absent	142	13.5 ± 2.6		59.8±16.8	
DAD	present	89	<b>13.3 ± 1.9</b>	<b>0.01</b>	<b>58.7±12.3</b>	<b>0.01</b>
	absent	142	<b>16.3 ± 2.6</b>		<b>77.4±16.5</b>	
INT	present	89	15.5 ± 2.5	0.24	72.1±15.7	0.24
	absent	142	15.9 ± 2.4		74.5±15.5	
TOT	present	89	84.9±10.06	0.01		

# Independent t test

**Table 4: Comparison of various factors among Diabetics**

		SAB	AUT	PPF	SOP	DAD	INT
Gender	male	61.3±12.5	66.1±20.2	68.1±12.4	55.6±18.8	60.7±13.0	70.3±16.5
	female	59.3±15	64.9±17.7	64 ±16.6	60.8±18.9	61.1±4	73.3±14.9
	# p value	0.5	0.7	0.2	0.19	0.13	0.3
Education	literate	61.2±14.8	<b>68.8±18.6</b>	<b>69.8±14.3</b>	60.1±17.6	59.0±12.9	74.0±17.2
	illiterate	59.3±12.8	<b>62.07±18.6</b>	<b>62.2±14.4</b>	56.6±17.7	58.3±11.8	70.1±13.9
	# p value	0.5	<b>0.08</b>	<b>0.01</b>	0.4	0.8	0.25
Marital status	married	<b>61.6±13.7</b>	66.5±19.1	<b>67.0±14.7</b>	<b>59.5±18.8</b>	58.6±12.4	<b>73.5±15.0</b>
	separated	<b>53.1±12.4</b>	59.8±16.9	<b>61.1±14.7</b>	<b>51.7±18.5</b>	58.9±12.1	<b>64.7±17.7</b>
	# p value	<b>0.03</b>	0.2	<b>0.01</b>	<b>0.015</b>	0.9	<b>0.04</b>
Age	less than 65 yrs	61.4±15.8	<b>69.0±19.4</b>	66.9±15.7	61.8±19.1	57.0±12.0	<b>76.3±14.2</b>
	more than 65 yrs	58.9±11.1	<b>61.4±17.5</b>	65.0±13.7	54.4±18.8	60.6±12.5	<b>67.2±16.1</b>
	# p value	0.39	<b>0.04</b>	0.56	0.06	0.16	<b>0.006</b>

# Independent t test

Among 231 study participants, 122 (48.8%) belonged to 60-65 years age group, 126 (54.5%) were females, 130(56.3%) were illiterates and 119 (51.6%) were completely dependent financially on family members. (Table 1)

Among 231 study participants, 89(38.5%) were having Diabetes mellitus. Among 89 diabetic participants, 70 (78.5%) were on Oral Hypoglycemic agents, 59(66.3%) had family history of Diabetes mellitus and 41(46.1%) had duration of 1-5 years.(Table 2)

Above table shows the six facets of quality of life among the study population with those Diabetics and non-diabetics. Above table shows the six facets of quality of life, viz. “sensory abilities (OLD – SAB)”, “autonomy (OLD – AUT)”, past, present and future activities (OLD – PPF)”, “social participation (OLD – SOP)”, “death and dying (OLD - DAD)” & “intimacy (OLD - INT)” and the transformed total QOL scores (TTS) among the study population. Statistically significant difference was found in SAB and DAD domain where Non-Diabetics had higher scores.(Table 3)

Above table shows the comparison among Diabetics. Among Diabetics, Male diabetics had higher scores in SAB, AUT, PPF and female diabetics had higher scores in SOP,DAD, INT scores however difference was not statistically significant. Literate Diabetics had higher scores in all domains however statistically significant difference was seen in AUT & PPF domain compared to Non literates. Married Diabetics had higher scores compared to unmarried/divorced/separated with SAB, PPF, SOP and INT domains where statistically significant difference was noted. (Table 4)

## DISCUSSION

The present study being a cross sectional community based study done on 231 participants following interview technique among old age with objective to assess Quality of life among elderly diabetics and assess factors affecting QOL using WHO-QOL OLD

questionnaire. Among 231 study participants, 122 (48.8%) belonged to 60-65 years age group, 126(54.5%) were females, 130(56.3%) were illiterates and 119 (51.6%) were completely dependent financially on family members.

The present study showed 89(38.5%) were already diagnosed with Diabetes mellitus. Study done by Jain A and Paranjape S in NEERI India showed 30.4% prevalence of Type II Diabetics among elderly which is similar to the present study.<sup>8</sup>The present study showed statistically significant difference in SAB(Sensory abilities) and DAD(death and alive) domain where Non-Diabetics had higher scores which means they had better quality of life compared to Diabetics. Study done by Kavi A et al in Belgavi , India among elderly diabetic patients attending urban primary health care facility showed health related quality of life among elderly diabetics was lower in social domain as compared to other domains. Kavi et al study also showed that gender had no difference in QOL among diabetics which is similar to present study. However higher quality of life was found among diabetic males compared with diabetic females in a study done by Bansode B and Nagarajan R.<sup>16</sup> Educational status will always impart a significant influence on the QoL score, suggesting a moderate elevation of the education levels showed a significant increase in the mean QoL scores among elderly diabetics. However in the present study, there was only significant difference in present-past-future domain among rural elderly and showing educational status had very little to do with QOL. Study done by P.E.WaËndell and J. Tovi among diabetic subjects reported poorer HRQoL with lower perceptions of their general health compared with the age matched controls showing elderly diabetic subjects had a poorer HRQoL than the general population.<sup>11</sup> In the study done by Prasanna Kumar et al in tertiary care hospital Mysuru showed Poor QoL with older age and deterioration in the QoL of older age group with various factors and type II Diabetes being a important reason which is similar to present study. <sup>12</sup> Study done by R. Ghassemzadeh, *et al.* in Iran using WHO – QOL among geriatric diabetics also showed

significant differences were found in physical, psychological and social domains between two groups ( $P<0.05$ ) when compared with home and nursing home where those who were nursed at nursing homes had higher scores and better quality of life stressing the importance of nursing among Diabetics especially in elderly.<sup>13</sup> Study done by Roopa K.S. and Rama Devi.G in Karnataka showed statistically significant gain in all the five domains of QOL following intervention program among elderly diabetics showing the importance of health educational intervention having a significant role in improvement of QOL which remains widely neglected. More of health educational programs should be promoted at all health care levels and this special group of elderly must not be neglected.<sup>14</sup>

The present study showed that married individuals had higher scores in many domains which were statistically significant however study done by Filipe Prazeres and Daniela Figueiredo among Diabetics in elderly showed no significant differences between marital status and QoL.<sup>15</sup> The diabetes patients in India are having low quality of physical, mental and social life. The awareness about diabetes prevention and management should be increased through disease management programs, trained peers and community health workers and community-based programs.<sup>16</sup>

#### Strengths and Limitations

The present study is a community based study and House to house survey was done using a standardized WHO questionnaire. The present study is also with many weaknesses. In the present study those elderly participants who were already diagnosed with Type II Diabetes were involved and no new attempt were made to diagnose newer cases and initial mental status evaluation among the participants would have added more strength as cognitive functions would be impaired after 60 years. Although various studies have been compared but the tool used in comparison are different.

#### Conclusion

Old age itself compromises QOL which is added with burden of Type II Diabetes among this age group. Health education regarding activity and environmental changes with increase in social relationship will help improving the QOL among the elderly population which is the pressing need among this age group today.

Acknowledgment: Dr Anjana, Dr Bhuvana, Dr Viplava and Dr Shravani and Study participants

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**Conflict of Interest:** None

**Source of funding support:** Nil

**How to cite this article:** Pradeep Tarikere Satyanarayana, Suwarna Madhukumar . Does Type II Diabetics compromise QOL among Rural Elderly? A community Based Cross sectional study in Rural Bangalore . Nat J Res Community Med 2018;7(4): 281-284.

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