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Quality of Life of Type 2 Diabetic Patients in Relation to Gender and Socio-economic status in Egypt

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Abstract

Background: Type 2 Diabetes mellitus, as one of the most important chronic diseases in the world, threats patients' quality of life.

Aim of the study: was to assess the quality of life of type 2 diabetic patients in relation to gender and socio-economic status in Egypt.

Design: A cross-sectional analytic study design was utilized in this study.

Setting: this study was conducted at the family medicine outpatient clinic of Suez Canal University Hospitals in Ismailia city, Egypt.

Sample: included 143 type 2 diabetic patients who were selected using probability systematic sampling technique.

Tools of data collections: two tools were used to collect data; structured interviewing and World Health Organization Quality of Life Questionnaire abbreviated version were used to collect data.

Results: revealed that the majority of the study group were females. More than three quarters of them had low socio-economic status level. The overall quality of life was good in less than half of them and less than two third of them were satisfied about their health. Men report better quality of life than women but this significant only in physical domain of QOL of them. There was statistically significant positive correlation between total score of quality of life and total score of socio-economic status of them.

Conclusion: Type 2 Diabetes mellitus affected negatively all domains of quality of life of the study group.

Recommendations: Develop health education program about life style modification and glycemic control for type 2 diabetic patients and further researches should be conducted to improve quality of life of them.

Keywords: "type 2 diabetes mellitus", "quality of life" and "socio-economic status".

INTRODUCTION

Diabetes mellitus (DM) is one of the most common chronic diseases worldwide. The prevalence of DM is rapidly rising all over the globe at an alarming rate. There were 415 million people or 8.8 % of adults aged between 20 and 79 living with diabetes globally, 192.8 million people with diabetes were undiagnosed and 75 % of them lived in low- and middle-income countries; this will rise to 642 million people by 2040. Every six seconds a person died from diabetes. This makes the anticipated impact of the condition greater and more damaging in these countries than in more affluent parts of the world. In Egypt, there were 7.8 million cases of diabetes among adults in 2015 and this will rise to 15.1 million cases by 2040. Type 2 diabetes mellitus (Type 2DM) is the commonest form of diabetes constituting nearly 90 % - 95 % of the diabetic population in any country (International Diabetes Federation (IDF), 2015).

The prevalence of type 2 DM continues to increase, especially in developing countries, despite improvements in research and this disease constitutes a major public health problem worldwide, both by the number of people affected and by the socio-economic implications presented by the management and treatment of the disease and its complications (Mshunqane et al., 2012; and Mustapha et al., 2014). The incidence of type 2 DM and related complications are growing rapidly in Egypt and has become a major health care issue among our population (Roglic and Unwin, 2011).

Unlike other chronic ailments, the treatment of type 2 DM depends to a great extent on day-to-day self-management of diet, exercise, and other factors; poor glycemic control caused by inadequate self-management can result in complications such as retinopathy, nephropathy, and neuropathy which markedly reduce patients' quality of life (Hara et al., 2014). The quality of life improvement is considered to be a major goal in diabetes control program. Improvement of quality of life is a primary purpose of health promotion. This can be achieved by preventive health programs with their greater impact on morbidity rather than mortality (Fries et al., 1989).

The World Health Organization (WHO) has established two main objectives in caring for diabetic patients: first, maintain the health and quality of life of individuals with diabetes through effective patient care and education and second, treat and prevent complications of the disease which should decrease morbidity and mortality as well as reduce treatment lost (Chaveepojnkamjorn et al., 2008).

Practical nurses have a vital role in the initial management of type 2 DM in primary care which is largely directed toward assisting patients to understand the nature and possible trajectory of the disease, besides self-managing. The approach taken by practice nurses involves assessments, goal-setting, and information-sharing about self-management in more extended face-to-face consultations which inevitably turn to conversations concerning lifestyle, behavior modification and risk reduction (Eggleton and Kenealy, 2009).

Several studies have demonstrated that diabetes has a strong negative impact on HRQOL, especially in the presence of complications. However, most of the studies on diabetes and HRQOL have been conducted in developed countries where there is access to better health care facilities. In developing countries, the morbidity associated with diabetes and its complications is certainly higher as compared to developed countries, which adversely affects the HRQOL of those patients. Moreover, studies of the HRQOL in diabetic patients in developing countries are rare (Jain et al., 2014). so; this study was aimed to assess the quality of life of type 2 diabetic patients in relation to gender and socio-economic status in Egypt.

SUBJECTS AND METHODS

The present study was conducted at the family medicine outpatient clinic of Suez Canal University Hospitals at Ismailia city, Egypt, including 143 type 2 diabetic patients who were selected using probability systematic sampling technique and were agreed to participate in this study. Data was collected through the use of two tools: Tool 1: A structured- interview questionnaire was developed by the researcher and included socio-demographic data: It was constructed by the researcher and socio-economic scale which was developed by El-Gilany et al., (2012) which included 7 domains with a total score of 84 such as education and cultural domain, occupation domain, family domain, family possessions domain, home sanitation domain, economic domain and health care domain. Socio-economic level was classified into very low, low, middle and high levels depending on the quartiles of the score calculated to assess socio-economic status. Tool 2: World Health Organization Quality of Life Questionnaire abbreviated version (WHOQoL-Bref): This questionnaire consisted of 26 items: two individual items that evaluate overall quality of life and satisfaction with health, and 24 items clustered into four domains (physical health, psychological health, social relationships, and environment) which are rated on a 5 – point likert scale (WHO, 1997). It was adopted from Abdel Hai et al., 2004 who carried out the translation into Arabic and a written approval for its use was obtained from the department of mental health, WHO-Geneva. All questions are concerned with the past two weeks (Abdel Hai et al., 2004).

Scoring system:

The WHOQOL-BREF (Field Trial Version) produced four domain scores. There are also two items that are examined separately: question 1 asks about an individual's overall perception of quality of life and question 2 asks about an individual's overall perception of his or her health. Domain scores were scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score of items within each domain was used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100. The method for converting raw scores to transformed scores were the first transformation method converts scores to range between 4-20, comparable with the WHOQOL-100 and the second transformation method converts domain scores to a

0-100 scale, using the formula shown below:

Transformed scale = ([score – 4] * 100/16). Where more than 20% of data are missing from an assessment, the assessment should be discarded. Where up to two items are missing, the mean of other items in the domain is substituted. Where more than two items are missing from the domain, the domain score should not be calculated (with the exception of domain 3, where the domain should only be calculated if < 1 item is missing) (WHOQOL Group, 1998). A total score was determined by summing scores across all items. Thus, scores on the WHOQOL-BREF could range from 26 to 130. The following values of scores were extracted from the reviewed studies and were applied in the current study: score ≤ 45, low QOL; score 46–65, moderate QOL; and score > 65, relatively high QOL (Bani-Issa, 2011).

Data entry and analysis were done using the Statistical Package for Social Sciences version 22, (SPSS Inc., and Chicago, IL). Data collected were coded and analyzed. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables as well as inferential statistics. Tests of significance that were used to test hypotheses included independent one-sample t-test, One-Way ANOVA analysis and Pearson Correlation Coefficient. Values were considered as statistically significant at P< 0.05.

RESULTS

The mean age of the study group of females was 54.6 (SD = 7.1) years while The mean age of males was 55.6 (SD = 8.8) years and the majority of them were females. There was highly statistically significant difference in the mean of total score of socio-economic status in males than females. Also, there was statistical significant difference in the mean of physical health domain score in males than females, as shown in (Table 1).

Table (2) indicated that the mean of educational and culture domain

Table (1): Baseline characteristics of the study group (n=143).

Baseline characteristics	Female (n=123)		Male (n=20)		t-test	p-value
	Mean	SD	Mean	SD		
Age (years)	54.6	7.1	55.6	8.8	0.53	0.59
Total score of socio-economic status	30.4	8.5	36.95	15.2	2.8	0.006**
Physical health domain	44.9	15.8	54.9	18.7	2.6	0.011*
Psychological health domain	45.1	11.2	49	15.9	1.4	0.17
Social relationships domain	58.3	16.9	56.7	15.6	0.42	0.68
Environmental domain	49.1	10.1	51.4	12.98	0.89	0.37

*Significant at p- value <0.05 level (2-tailed); **highly significant at p value <0.01 level (2-tailed).
N.B: HbA1c level*Based on the number of cases, HbA1c was conducted on 54 female and 7males of the study group. SD: Standard deviation.
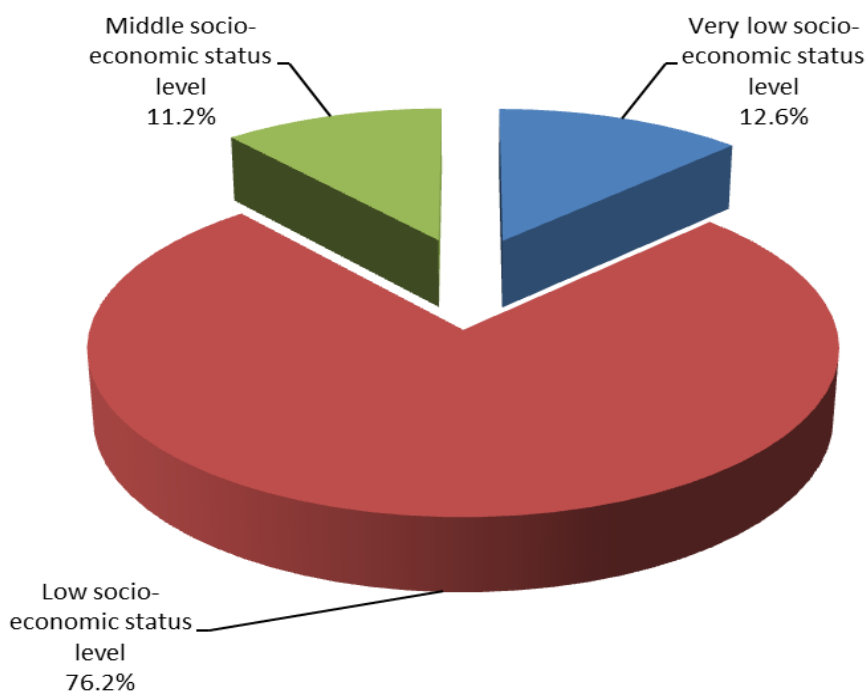
score of the study group was 6.13 score (SD = 6.86) and their mean of occupational domain of them was 2.46 score (SD = 1.66). As regard to their mean of economic domain of the study group was 1.82 score (SD = 0.83) and their mean of health care domain score of them was 2.71 score (SD = 0.47). As shown in Figure 1, more than three quarters (76.2%) of the study group had low socio-economic status level while the minority of them (11.2%) had middle socio-economic status level.

Table (3) showed that for overall quality of life and general health related questions (48.3% and 69.2%, respectively) of the study group were rated as good. As far as physical, psychological, social and environmental domains were concerned, majority of the study group responded as poor to good.

Regarding quality of life domains, the current study revealed that physical health domain less than half (48.3%) of the study group was rated as low level, while psychological health domain and

Table (2): Socio-economic domains scores of the study group (n=143)

Socio-economic domains	Mean	SD
Educational and culture domain	6.13	6.86
Occupational domain	2.46	1.66
Family possessions domain	4.44	1.15
Family domain	7.01	1.67
Home sanitation domain	6.78	1.55
Economic domain	1.82	0.83
Health care domain	2.71	0.47

Middle socio-economic status level 11.2%

Very low socio-economic status level 12.6%

Low socio-economic status level 76.2%

Figure (1): Distribution of the study group according to levels of socio- economic status (n=143)

Table (3): Distribution of responses of the study group for items of likert scale regarding WHO Quality of Life-Bref (n=143)

Scale points/ domains and facets	1Very poor		2 Poor		3 Neither poor nor good		4 Good		5 Very good	
	No.	%	No.	%	No.	%	No.	%	No.	%
General QOL	1	0.7	60	42	12	8.4	69	48.3	1	0.7
General health	2	1.4	35	24.5	5	3.5	99	69.2	2	1.4
Physical health										
Pain	14	9.8	64	44.8	40	28.0	22	15.4	3	2.1
Energy	7	4.9	48	33.6	68	47.6	20	14	0	0.0
Sleep and rest	13	9.1	75	52.4	5	3.5	48	33.6	2	1.4
Dependence on medical aids	12	8.4	55	38.5	46	32.2	26	18.2	4	2.8
Mobility	3	2.1	52	36.4	12	8.4	75	52.4	1	0.7
Activities of daily living	3	2.1	59	41.3	5	3.5	73	51.0	3	2.1
Working capacity	0	0.0	60	42.0	6	4.2	76	53.1	1	0.7
Psychological health										
Positive feelings	5	3.5	29	20.3	89	62.2	19	13.3	1	0.7
Negative feelings	36	25.2	54	37.8	43	30.1	10	7	0	0.0
Self-esteem	2	1.4	27	18.9	6	4.2	107	74.8	1	0.7
Concentration	10	7	54	37.8	48	33.6	29	20.3	2	1.4
Bodily image	28	19.6	44	30.8	53	37.1	17	11.9	1	0.7
Personal beliefs	3	2.1	12	8.4	87	60.8	39	27.3	2	1.4
Social relationships										
Personal relationships	3	2.1	22	15.4	8	5.6	106	74.1	4	2.8
Sexual activity	18	12.6	37	25.9	37	25.9	51	35.7	0	0.0
Social support	4	2.8	23	16.1	12	8.4	102	71.3	2	1.4
Environment										
Financial Support	4	2.8	41	28.7	93	65	5	3.5	0	0.0
Accessibility of information	2	1.4	52	36.4	57	39.9	32	22.4	0	0.0
Leisure activity	33	23.1	86	60.1	16	11.2	8	5.6	0	0.0
Home environment	4	2.8	13	9.1	1	0.7	124	86.7	1	0.7
Access to health care	20	14	26	18.2	8	5.6	89	62.2	0	0.0
Security	4	2.8	17	11.9	88	61.5	33	23.1	1	0.7
Physical environment	3	2.1	10	7	81	56.6	47	32.9	2	1.4
Transport	13	9.1	43	30.1	5	3.5	82	57.3	0	0.0

environmental domain (51.7% and 63.6%, respectively) of them were rated at moderate level. As regard to social relationships domain less than half (45.5%) of them was rated at high level (Table 4).

One-way ANOVA analysis was conducted to test the statistical significance difference of quality of life domains scores between socio-economic status groups of the study group, there was highly statistically significant difference between physical health domain score regarding socio-economic status groups (p= 0.001) and environmental domain score (p= 0.001). As regard to psychological health domain score, there was statistical significant difference between socio-economic status groups (p= 0.02) (Table 5).

Figure (2) showed that there was statistically significant positive correlation between total score of quality of life and total score of

Table (4): Distribution of the study group according to quality of life domains (n=143)

Quality of life domains	Low quality of life		Moderate quality of life		High quality of life	
	No.	%	No.	%	No.	%
Physical health domain	69	48.3	57	39.9	17	11.9
Psychological health domain	62	43.4	74	51.7	7	4.9
Social relationships domain	34	23.8	44	30.8	65	45.5
Environmental domain	43	30.1	91	63.6	9	6.3

N.B: score ≤ 45, low QOL; score 46–65, moderate QOL; and score > 65, relatively high QOL.

Table (5): Relation between quality of life domains and socio-economic status levels in the study group (n=143)

Quality of life domains	Socio-economic Status levels						F	P value
	Very low (n=18)		Low (n=109)		Middle (n=16)			
	Mean	SD	Mean	SD	Mean	SD		
Physical health domain	38.8	16.0	45.7	16.0	58.7	15.4	6.9	0.001**
Psychological health domain	40.7	11.6	45.4	11.6	52.4	11.9	4.3	0.02*
Social Relations domain	50.5	17.3	59	16.2	60.4	17.3	2.2	0.11
Environmental domain	41.6	8.7	49.8	10.1	56.2	10.6	9.3	0.001**

*Significant at p value <0.05 level (2-tailed), **highly significant at p value <0.01 level (2-tailed). SD: Standard deviation.
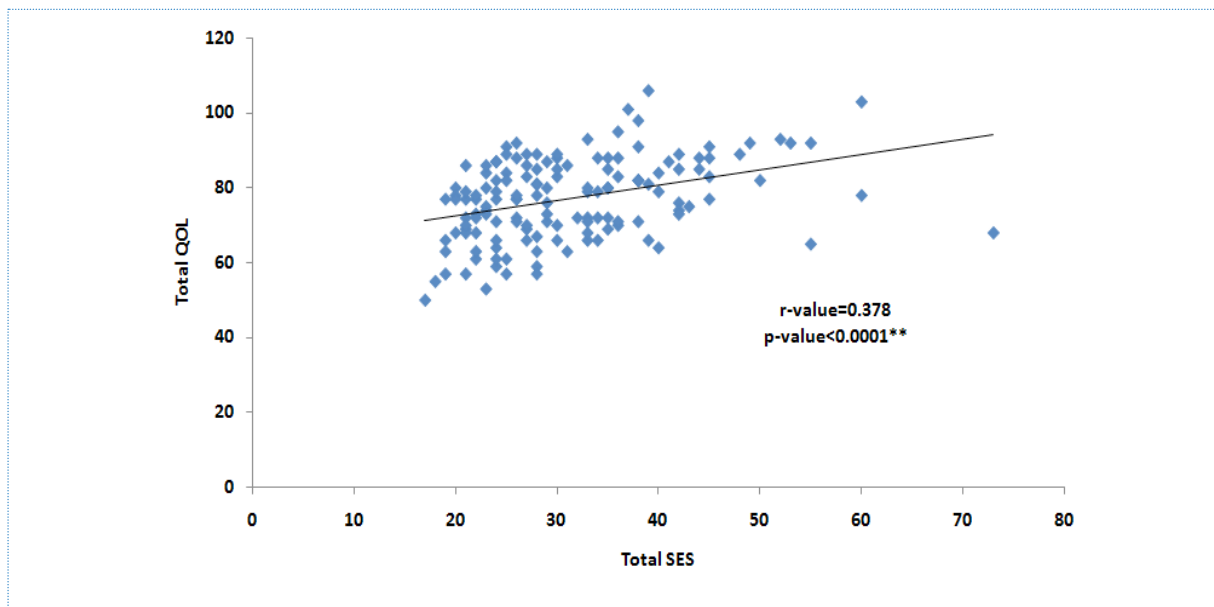
Figure (2): Correlation between total score of quality of life and total score of socio-economic status of the study group (n=143)

socio-economic status of the study group.

DISCUSSION

The risk of diabetes continues to increase worldwide due to population growth, aging, urbanization and increasing prevalence of physical inactivity and obesity. International Diabetes Federation (IDF) indicated that the Middle East and North Africa (MENA) region has the highest rate of diabetes prevalence in the world. Also, IDF estimated that by 2030; patients with diabetes will double to current estimates of up to 59.9 million in the MENA region (Sherif and Sumpio, 2015). The present study aimed to assess the quality of life of type 2 diabetic patients in relation to gender and socio-economic status in Egypt.

The current study revealed that the majority of the study group were females. This reflects the fact that the females' attendance to family medicine outpatient clinic is higher than males' and this result is supported by the study conducted in Egypt by Arafa and Amin (2010) who found that the prevalence of diabetes increased with age, and was higher among females aged (50-59). This result agreed with Abd Elaziz et al., (2014) who reported that females represented more than two third of their study group. This result also was in agreement with Al-Byati et al., (2014); Genga et al., (2014) who found that females represented more than half of their study group. On the contrary to this result Anumol Mathew et al., (2014) in their study found that more than half of the study group were males. This could be due to their low family income which made them depending on regular treatment in governmental hospitals.

The current study revealed that more than three quarters of the study group had low socio-economic status level. This result agreed with Bakry (2006) who found that less than half of the study group

had low socio-economic status level. This could be confirmed in the study conducted by Hwang and Shon (2014) who mentioned that low educational attainment possibly limits information and resources linking to healthy behaviors and environment exposures where the mean of educational and culture domain scores of the present study group was 6.13 and it has been established that low socio-economic status is associated with low health status.

Regarding overall quality of life and general health, less than half of the study group had their quality of life rated as good and less than two thirds of them were satisfied about their health coming in accordance with Bakry (2006) who nearly two thirds of the study group had their quality of life rated as good and less than three quarters of them were satisfied about their health. These results agreed with Genga et al., (2014) who found that one third of the study group had their quality of life rated as good and more than one third of them were satisfied about their health. These results disagreed with the study of Khongsdir et al., (2015) who reported that two fifths of the study group had their quality of life rated as poor and one third of them were satisfied about their health. These results can be explained that culture promotes endurance, acceptance and adaptation to one's fate (patients do believe that all their life affairs are controlled by God (Almighty Allah); including presence of illness which could be the reason of these results.

results were inconsistent with Gholami et al., (2013) who reported that the lowest scores of quality of life for the study group was psychosocial domain. Also, these results contradicted Bakry (2006) who reported that the lowest scores was social relationships domain among type 2 diabetic patients. This could be explained as type 2diabetic patients had higher rate of complications that affect the Physical function. Physical function limitations especially due to vision difficulties, peripheral neuropathy, and or heart disease can have a negative impact on quality of life.

Also, less than half of the study group had high quality of life in social relationships domain. This implied that the participants had relatively more satisfaction of their personal relationships and social support which has a positive influence on physical and psychological well-being of patients, which is reflected in better QoL. This result was in accordance with Khongsdir et al., (2015) who found that patients had the highest scores in social relationships domain. On the other hand, the result of the present study was inconsistent with the study of Bakry (2006) who observed that the most affected domain was social relationships. The difference in the impact of diabetes on social relationship can be attributed to a great extent on difference in culture and tradition (This could be attributed to intimate family relationships in our society).

The present study revealed that there was highly statistical significant difference in the mean of total score of socio-economic status in males than females. The existing literature shows mixed findings on the role of income and education on the prevalence of type 2 diabetes. On the same line, Hwang and Shon (2014) mentioned that individuals who had completed college education and had a higher income were approximately 30% less likely to have diabetes than those of lower SES, so low literacy rates leads to low SES in the female subjects prevents them from receiving the care needed to achieve adequate QOL.

Moreover, there was statistically significant difference only in the mean of physical health domain scores in males than females. This finding could be explained by their worse situation in respect to the disease in the study group but this is still an evidence for gender inequalities. This finding agreed with Hussein et al., (2011) who found that females had lower score of QOL than males only for physical health domain. This finding was supported with Eljedi et al., (2006); Jain et al., (2014) who found that female diabetic patients had consistently lower QOL but for all domains than male diabetic patients. This finding was inconsistent with the study conducted by Odili et al., (2008); Khongsdir et al., (2015) who found that there was no statistically significant difference between diabetic males and females in all QOL domains.

Regarding the relation between quality of life domains and socio-economic status, high socio-economic status level had a positive effect on QoL of patients, with great significant association between all quality of life domains and total score of socio-economic status. This finding agreed with Manjunath et al., (2014) who found that belonging to high socio-economic status led to better QoL compared to their counterparts. This finding agreed with Anumol Mathew et al., (2014); Gautam et al., (2009) who found that quality of life score had significant association with socio-economic status. This finding was in accordance with Wexler et al., (2006); Bakry (2006); Papadopoulos et al., (2007) who observed that low socio-economic status (social class) correlated with lower quality of life. This finding disagreed with Chaturvedi et al., (1998) who found that there was an inverse relationship between socio-economic status and quality of life in patients with diabetes. Also, this finding was supported by Shokair (2007) who added that, in large relatively low socio-economic families/communities, it was clear that, considerable number of members belonging to those families/communities had negative or unfavorable attitudes and self-care health practices towards chronic diseases in general and diabetes in particular.

Based on the findings of the current study, it can be concluded that, type 2 diabetes mellitus associated with low quality of life especially physical health domain. Men reported better quality of life than women but this significant only in physical domain of QOL of them. There was statistically significant positive correlation between total score of quality of life and total score of socio-economic status of them therefore, develop health education program about life style modification and glycemic control for these patients and further researches should be conducted to improve quality of life of type 2 diabetic patients.

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