The Impact of Diabetes Mellitus on Patients’ Quality of Life

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Abstract

Objective: This study aimed to measure the impact of diabetes mellitus (DM) on patients’ quality of life (QoL).

Materials and Methods: This cross-sectional study involved DM patients that underwent follow-up at a hospital in central Malaysia. Data were collected using self-developed and self-administered questionnaire. Statistical analysis was performed using Statistical Package for the Social Sciences version 24.

Results: Around 75 (56.8%) of the patients were satisfied with their daily routine life activities. A total of 88 (66.7%) were also satisfied with their family and friends’ relationships. On the contrary, 109 (82.6%) were not satisfied with their sexual life. There was a statistically significant correlation observed between age and QoL.

Conclusion: This study showed that the majority of DM patients had moderate QoL. Diet, living conditions, and concerns about the future had also a greater influence on their overall QoL.

Key words: Diabetes mellitus, Diabetes mellitus patients, Quality of life

INTRODUCTION

Diabetes mellitus (DM) is one of the main health problems worldwide which may affect any person of either gender, at any age from any race and socioeconomic background.[¹] DM is a chronic disease that usually results in severe complications and requires long-term care. [²] A recent statistic by the International Diabetes Federation showed that more than 385 million people worldwide have been diagnosed with DM.[³] Among Western Pacific countries, more than 135 million people were present with a prevalence of 8.5% and approximately 53.6% were undiagnosed cases of DM.[³] In the year 2012, DM had caused 1.5 million deaths worldwide and which increased to around 5 million in 2014.[⁴]

According to the International Diabetes Federation, the number of people living with DM keeps increasing with a prevalence of more than 16% annually.[⁴,⁵] On the other side, the number and the rate of deaths are also exceedingly mounting every year worldwide.[¹,²]

In Malaysia, DM prevalence is also continuously increasing every year, showing a significant burden on the healthcare sector.[¹,⁶] DM is a chronic disease that has both physical and physiological impact on patients suffering from it.[⁶] Numerous studies have reported that diabetic patients are having a lower quality of life (QoL) as compared to healthy individuals. In literature, it is reported that the impact of DM on QOL is significantly influenced by several factors such as age, gender, and presence or severity of complications and comorbid conditions.[¹,²,⁶]

QoL is a multidimensional concept that consisted of numerous attributes influencing the physical and emotional well-being of the studied individuals.[⁷] The management of DM is based on self-care, medication, and lifestyle changes. Effective management of DM can improve QoL.[⁸] Many studies have shown that DM patients have lower QoL due to the complications associated with DM.[⁹] This study aimed to measure the impact of DM on patients’ QoL.

In the year 2016, Diabetes Care magazine reported that 29.1% of the population in the United States were diagnosed with DM.[¹⁰] The prevalence of DM has increased steadily over the past decades, with the number of cases expected to exceed 522 million by 2030.[¹¹] In Malaysia, the prevalence of DM in the year 2015 was reported to be 21.2%.[¹²] The prevalence of DM among males was 24.6% and females was 18.0%.[¹²] The prevalence of DM in the age group of 20-39 years was 3.4%, whereas it increased to 22.9% in the age group of 40-59 years.[¹²] The prevalence of DM in the age group of 60 years and above was 33.0%.[¹²]

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Received: 10-06-2020
Revised: 27-07-2020
Accepted: 04-08-2020
on numerous disease-related factors and social aspects that stifly influence the treatment outcomes. Continuous monitoring and apt control of blood glucose levels are key to avoid life-threatening complications. Numerous studies reported that the prolonged adverse effects immensely affect the self-care behaviors of the DM patients and result in compromised QoL among them. Different studies reported that DM has a negative impact on the overall QoL of DM patients. Nevertheless, as these studies, different tools were used among different populations; hence, it is still debatable to know the correct findings of the QoL of DM patients in different cohorts of patients in different countries. There are two main types of research tools which usually use to measure QoL among DM patients, that is, generic or disease-specific. This study was conducted in central Malaysia to determine QoL in DM patients using a self-develop tool.

**MATERIALS AND METHODS**

**Study design and participants**

This cross-sectional study, which involved DM patients undergoing follow-up at an endocrine department in a famous hospital in Malaysia, was conducted from June to September 2016. Study subjects were screened for inclusion and exclusion criteria and given consent forms and patient’s information sheet to fill up before being included in the study. The inclusion criteria were as follows: Age above 18 years old, on treatment or medication for at least 1 year, and undergo follow-up in the hospital and free from cancer. A total of 132 DM patients who met the inclusion criteria were screened to be recruited.

**Ethical considerations**

The study proposal together with a self-administered questionnaire was sent to the concerned authorities for evaluation and registration. Then, the research approval was obtained from the concerned authorities to conduct the study. This study was conducted under the strict protocol of the institute.

**Research tool**

The self-developed research tool was consisted of various general and specific questions that measure the impact of QoL in DM patients. The 10 routine life questions were included in the self-developed tool. They were mainly related to daily activities of the patients, that is, working environment, family life, friendships and social life, sexual life, physical appearance and health, leisure and personal activities, feelings about the future, financial and current living situation, and freedom to eat and drink favorites. In the dichotomous question of the research tool, each question was given 1 point for Yes and 0 for No answer. A score of 8 Yes answers (80%) or above was considered as good QoL, and 4–6 Yes answers (60–40%) as moderate QoL, whereas less than 4 Yes answers (40%) were evaluated as low QoL.

**Statistical analysis**

The data collected from the patients were analyzed using Statistical Package for the Social Sciences version 24. The level of significance was set as $P < 0.05$. Normality of collected data was checked using frequencies test. The data were analyzed using a one-way ANOVA test, independent $t$-test, and Pearson’s correlation test.

**RESULTS**

Sociodemographic characteristics of the studied population are presented in Table 1. The mean (SD) age of the patients was 58.33 ($\pm$ 12.83) years. The youngest study patient was 22 years old and the oldest study subject was 84 years old. The highest frequency of patients was in the age group of 56–75 years, while the lowest frequency was found among the older age group than 75 years. Among 132 study respondents, the major proportion of respondents were female which accounted for 62.9% ($n = 83$). The remaining proportion of the study subjects was male. Moreover, the majority of the respondents in this study were Malay, followed by Indian, Chinese, and other ethnic. The majority of the respondents in this study also were married and had a secondary level of education. The highest number of patients had less than RM 1500 monthly income and least number of patients had monthly income equal or more than RM 7500.

Basic diabetic (clinical) data of the studied population are presented in Table 2. The mean duration of DM was 11.73 years ($\pm$ 7.71), with the majority of patients found to have more than 11 years duration of DM. Most of the patients had a family history of DM. The number of patients that use insulin and those who did not use insulin was almost equal.

Table 3 shows the research tool questions’ response in N (%) as Yes and No. It was observed that the majority of the DM patients in the studied cohort were satisfied with their overall QoL. On the other hand, the majority of them were not satisfied with their sexual life. There were also not much positive responses received regarding freedom to eat and drink their favorites.

Table 4 represents the statistically significant ($P < 0.05$) relationship (correlation) between the male and female patients regarding the overall mean QoL scores. The mean
QoL score for males was 6.32 ± 4.47 and 7.03 ± 1.55 for female patients. There was a statistically significant correlation \((P < 0.05)\) observed among males and females for the QoL for some of the questions such as current family relationships, social life, activities satisfaction, sexual life, overall QoL, and eating favorite foods.

**DISCUSSION**

This study provides detailed information about DM dependent QoL and its assessment among DM patients in a hospital in Malaysia. The overall total mean score among all of the patients was found to be 6.79 ± 6.22, which reflected that the overall majority of the patients had moderately-good QoL except a few questions. The majority of patients monitored their blood glucose levels at least 2–3 times in a week and the majority of them experienced hypoglycemic once in a few months. The vast majority of patients had 3–5 comorbidities. The average total prescribed medication received or taken by the patients was 5.38 (± 1.935).

The most affected domains in this cohort were current family relations, social and leisure life, sexual life, overall QoL, and eating favorite foods. The results of this study were quite similar to a study conducted in Slovenia by Turk et al. using the ADDQOL tool, among 125,000 DM patients which found that the most affected domain was “freedom to eat” and the least affected domain was “people’s reaction.” According to another study, freedom to eat among DM patients is of vital importance. This indicates that there was a strong influence of
Table 3: Distribution of QoL tool response by the studied patients

<table>
<thead>
<tr>
<th>QoL questions</th>
<th>No</th>
<th>%</th>
<th>Yes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you satisfied with your daily routine life activities</td>
<td>57</td>
<td>43.2</td>
<td>75</td>
<td>56.8</td>
</tr>
<tr>
<td>Are you happy with your current family relations</td>
<td>44</td>
<td>33.3</td>
<td>88</td>
<td>66.7</td>
</tr>
<tr>
<td>Are you happy with your social and leisure life</td>
<td>45</td>
<td>34.1</td>
<td>87</td>
<td>65.9</td>
</tr>
<tr>
<td>Are you satisfied with your sexual life</td>
<td>109</td>
<td>82.6</td>
<td>23</td>
<td>17.4</td>
</tr>
<tr>
<td>Are you satisfied with your body appearance and self-confidence</td>
<td>68</td>
<td>51.5</td>
<td>64</td>
<td>48.5</td>
</tr>
<tr>
<td>Do you think you are self-motivated and satisfied from your working environment</td>
<td>60</td>
<td>45.5</td>
<td>72</td>
<td>54.5</td>
</tr>
<tr>
<td>Are you worried about your future endeavors</td>
<td>76</td>
<td>57.6</td>
<td>56</td>
<td>42.4</td>
</tr>
<tr>
<td>Are you satisfied with your current financial position</td>
<td>67</td>
<td>50.8</td>
<td>65</td>
<td>49.2</td>
</tr>
<tr>
<td>Are you satisfied with your overall quality of life</td>
<td>46</td>
<td>34.8</td>
<td>86</td>
<td>65.2</td>
</tr>
<tr>
<td>Do you feel freedom eating your favorite foods</td>
<td>89</td>
<td>67.4</td>
<td>43</td>
<td>32.6</td>
</tr>
</tbody>
</table>

QoL: Quality of life

Table 4: Statistical correlation among male and female DM patients regarding overall mean QoL score

<table>
<thead>
<tr>
<th>Statements</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current family relations satisfaction</td>
<td>0.037*</td>
</tr>
<tr>
<td>Social and leisure life satisfaction</td>
<td>0.017*</td>
</tr>
<tr>
<td>Sexual life satisfaction</td>
<td>0.009*</td>
</tr>
<tr>
<td>Overall QoL satisfaction</td>
<td>0.043*</td>
</tr>
<tr>
<td>Eating favorite foods satisfaction</td>
<td>0.025*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level (2-tailed). DM: Diabetes mellitus, QoL: Quality of life

dietary restrictions on the QoL. [18] Based on the results of the study, there was a small, positive correlation between age and the impact of the disease on the overall QoL. The result was statistically significant, which indicated that the increase in age significantly contributed to a higher QoL total score and reflected the higher negative impact of DM on patients’ QoL. This increase in the negative impact of DM on patients’ QoL might be due to the aging process or DM complications (macrovascular and microvascular) that were experienced by the studied patients. A few other pieces of evidence showed that the Asian population develops DM at a younger age than the Western population. [19]

An observational and cross-sectional study in DM patients in 661 healthcare centers conducted in Spain also showed that the mean (± SD) age of the study population was 64.00 (± 11.00) years, which was much higher than this study. [20] In another study in Korea, it was shown that the mean age of the study population was 57.5 (± 12.00), which was lower than the mean age of study in Slovenia, Spain, and slightly lower compared to this study. [21] A local study by Inche et al. about the prevalence and determinants of appropriate health-seeking behavior among DM patients in a different area found that the mean age of DM patients was 53.5 (± 13.00) years. [22] This indicated that different populations may result in different mean age. Regarding other aspects of aging, some patients might experience a gradual decline in body function due to biological senescence. Aging is commonly associated with more body fat and reduced muscle mass, which usually starts around age 50 in healthy individuals and often leads to a decline in a person QoL and independence. In addition, another study showed that the presence of multiple chronic comorbidities progressively increased with an increase in age and often contributed to the low QoL. Likewise, the possibility for developing comorbidities such as myocardial infarction, stroke, and reduced cognitive and physical functioning also increases with an increase in age and ultimately results in decreased QoL.

The majority of DM patients were worried about possible complications that may lie ahead of them at some stage in the future and the possible need for insulin injections if their DM got worsen. Such future worries often pose an excessive impact on their overall QoL. Thus, all healthcare providers, including doctors, nurses, pharmacists, psychologists, and nutritionists, should work as a team to provide the best disease management to DM patients. Indeed, effective communication between the healthcare providers and DM patients is vital to identify and implement appropriate interventions which could improve their overall QoL.

CONCLUSION

This study suggested that healthcare providers’ interventions to DM patients should be more focused on brain-storming, diet management, precise pharmacotherapy, and emotional support to improve their overall QoL. A precise diet plan, active physical lifestyle, regular self-monitoring, continuous blood glucose measurement, and refrain from stress triggers are important elements that can help DM patients to enjoy a healthy life with improved QoL. In addition, psychologists can also help DM patients to improve their emotional health, health beliefs, and behaviors.

ACKNOWLEDGMENT

The authors would like to thank the Dean of Scientific Research at Prince Sattam Bin Abdulaziz University, Al-Kharj, Saudi Arabia, for the support in the publication of this manuscript. The authors would also like to express their
sincere gratitude to all of the participants involved in this study in any capacity.

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Source of Support: Nil. Conflicts of Interest: None declared.