

## HEALTH-RELATED QUALITY OF LIFE OF ADULT WITH TYPE 2 DIABETES MELLITUS IN RURAL AREA

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### ABSTRACT

#### Introduction:

Type 2 Diabetes Mellitus is one of chronic illnesses that affect patients' quality of life. The aim of this study was to determine the HRQOL among Type 2 diabetes mellitus patients attending health clinics at Tampin district, Negeri Sembilan.

#### Methodology:

A cross-sectional study applying the Malay version SF-36 and structured validated questionnaires among Type 2 diabetes mellitus patients attending five health clinics at district of Tampin, Negeri Sembilan whose were selected using stratified sampling method. Data were analysed using SPSS version 21 of significant level  $\alpha=0.05$ .

#### Results:

Response rate was 99.5% (430 patients participated). The mean age of the respondents was 57.5 ( $\pm 8.88$ ) years and the mean duration of having diabetes was 7 ( $\pm 5.01$ ) years. The mean score of all SF-36 health domains with exception of role emotional of respondents were significantly lower than that of the normal population scoring by Azman.(2003). Physical functioning ( $P<0.001$ ), role physical ( $P<0.001$ ), vitality ( $P<0.001$ ), mental health ( $P<0.001$ ), social functioning ( $P<0.001$ ), bodily pain ( $P<0.001$ ), and general health ( $P<0.001$ ) were seven domains indicated lower than Malaysian norm.

#### Conclusion:

HRQOL of Type 2 Diabetes patients were lower than that of Malaysian general population in all SF-36 domains, with the exception of role emotional domain.

**Key Words:** HRQOL, Type 2 Diabetes Mellitus, SF-36, Health Clinics, Negeri Sembilan

## 1.0 Introduction

Type 2 Diabetes Mellitus has been everywhere in the world and indicated that all countries from different socioeconomic background are not omitted from its burden. Managing Type 2 Diabetes Mellitus such as, monitoring diabetic patients only with metabolic variables has been seen to be insufficient, and thus, assessments of quality of life have been initiated. HRQOL is an important outcome to assess Diabetes Mellitus as clinical parameters, such as glycated haemoglobin (HbA1c), a measure of average blood glucose control over the previous three months, often fail to capture the overall impact of the disease among diabetic patients. The World Health Organization Quality of Life (WHOQOL) defined quality of life as individual perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHOQOL GROUP.1998). Numerous studies have been conducted on HRQOL among patients with Type 2 Diabetes Mellitus. Most of previous studies worldwide, demonstrated that Type 2 Diabetes Mellitus has a negative impact on HRQOL (Redekop et al., 2002; Kalda et al., 2008; Bennett et al., 2008; Kamarul Imran et al., 2010; Porojan et al., 2012; Cheah et al., 2012). Moreover, having Type 2 Diabetes Mellitus also seen to have lower HRQOL as compared to whom without Type 2 Diabetes Mellitus (Bennett et al., 2008; Porojan et al., 2012), but better HRQOL than people with other serious chronic diseases (Rubin et al.,1999). In addition, HRQoL in subjects with Type 2 Diabetes Mellitus may be associated with the number of other co-existing medical conditions (Maddigan et al., 2005). It is generally known that the overall quality of life in Diabetes Mellitus patients is poorer than in normal population (Porojan et al.,2012). In addition, local study on health-related quality of life revealed that the SF-36 scale scores were lower than those of the SF-36 norms among Type 2 Diabetes Mellitus patients in Malaysia (Kamarul Imran et al., 2010). However, the studies of HRQOL conducted among Diabetes Mellitus patients in Malaysia are still scarce. Therefore, more studies should be carried out in Malaysia to increase understanding on how having Type 2 Diabetes Mellitus affects patients' HRQOL, their needs of interventional programmes to improve their HRQOL.

## 2.0 Material and methods

### 2.1 Design and sample size

This cross-sectional study was conducted in health clinics in Tampin district, Negeri Sembilan. There are five health clinic located in Tampin district. Until January 2013, the clinics had 4792 patients actively seek diabetes treatments. We took 6 months to conduct the study and collected data once a week for each five health clinics. A total of 430 respondents were recruited (99.0% response rate). Patients who had Type 2 Diabetes Mellitus for at least one year, who were aged 18 years or older, who had recent HbA1c data (3 month prior to data collection day), who were literate in Malay language were included.

Proportionate stratified random sampling among patients with type 2 diabetes mellitus who were actively treated in all five health clinics in Tampin district during study period. Then, simple random table sampling was adapted to select the patients from a list of those who were

to be seen on their follow-up day. An informed consent form containing all the necessary information about the study was provided to the respondents.

## 2.2 Instrument

The Malay version of the SF-36 questionnaire was used as a health survey tool to measure quality of life of patients in the study. It is well-known and widely utilised health status measure, (2) which measures physical and mental components of quality of life. The Malay version of the SF-36 used in the study was translated and validated (Sararaks et al., 2005), and Malaysian norm for SF-36 was produced by The Public Health Institute of Malaysia (Azman et al., 2003). The Malay version SF-36 instrument consisted of 36 items scored eight domains: Physical functioning (10 items), role limitations due to physical problem (4 items), bodily pain (2 items), general health perception (6 items), social functioning (2 items), role limitations due to emotional problems (3 items), vitality (4 items), and mental health (5 items). All items are scored so that a high score defines a more favourable health state. Scores represent the percentage of total possible scores, while scale scores represent the average for all items in the scale that the respondent answered. For example, items 6 and 10 are used to score the measure of social functioning. Each of the two items has 5 response choices. Socio-demographic characteristics of respondents and the Malay language version of SF-36 form were led by an interview (face-to-face).

## 2.2 Data analysis

Statistical Package of Social Science (SPSS) Version 21 was used to analyse the data. Descriptive statistics were reported as frequencies, means and standard deviation, and ranges. Independent t-test was used to analyse qualitative variables and QOL scores.

## 3.0 Results

### 3.1 Socio-demographic characteristics

Table 1 shows the socio-demographic characteristics of the respondents and the mean, standard deviation and the frequency.

**Table 1:** Socio-demographic characteristics of respondents (N = 430)

Variables	N	Percentage (%)
<b>Gender</b>		
Male	197	45.8
Female	233	54.2
<b>Age</b>		
Mean $\pm$ SD	57.45 $\pm$ 8.88	Range (30-79 years old)

<b>Ethnicity</b>		
Malay	311	72.3
Chinese	50	11.6
Indian	69	16.0
<b>Marital status</b>		
Married	357	83.0
Single/divorced/widowed	73	17.0
<b>Number of children</b>		
0	5	1.2
1 - 3	125	29.1
4 - 6	249	57.9
≥ 7	51	11.9
<b>Household income</b>		
< RM1000	88	20.5
RM 1000 - 3000	331	77.0
> RM 3000	11	2.6

A total of 430 patients were approached and agreed to be interviewed, giving a response rate of 99.0%. The study comprised 233 females (54.2%), the mean age of the respondents 58 years old ( $SD= 8.88$ ) and ranged from 30 to 79 years old. More than half of the sample was Malay (72.3%), whereas 16.0% of the sample was Indian and another 11.6% was Chinese. A majority of the sample claimed that they were married (83%) and 249 (57.9%) of respondents have four to six children. Approximately two-thirds of the respondents reported a monthly household income RM1000 to RM3000 as shown in Table 1.

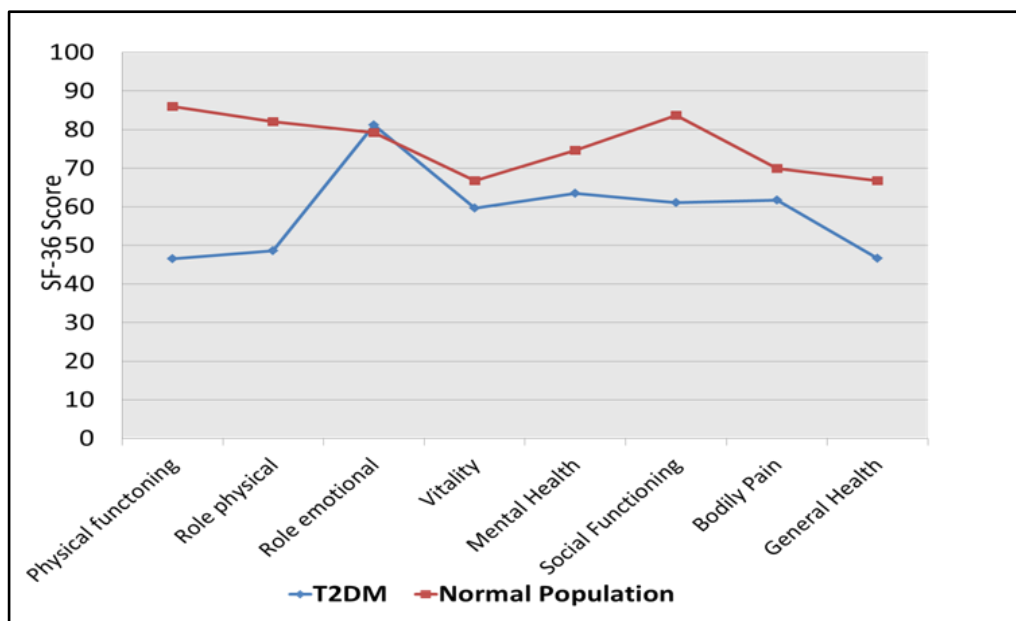
### 3.2 HRQOL

Table 2 presents the quality of life of respondents. Mean domain scores for the sample ranged from 46.58 (physical functioning) to 81.16 (role emotional).

**Table 2:** Quality of life scores of respondents

SF-36 scale scores	Type 2 Diabetes Mellitus (N= 430)
	Mean $\pm$ SD
Physical Functioning	46.58 $\pm$ 15.52
Role Physical	48.58 $\pm$ 26.59
Role Emotional	81.16 $\pm$ 20.46
Vitality	59.71 $\pm$ 14.26
Mental health	63.50 $\pm$ 10.75
Social Functioning	61.05 $\pm$ 17.35
Bodily Pain	61.77 $\pm$ 15.15
General health	46.63 $\pm$ 12.37

Figure 1 shown the quality of life data for each of the domains and component summaries of the SF-36 instruments in this study as compared with the Malaysian normal population study (Azman et al. 2003). The scores of seven domains of the SF-36 among Type 2 Diabetes Mellitus respondents were significantly lower than those of the normal population scores ( $P < 0.001$ ) except for role emotional domain ( $P = 0.051$ ). Physical component summary and mental component summary scores were not available for the general Malaysian population norm; therefore comparisons were made only for eight SF-36 domains.



**Figure 1:** Quality of life scores of respondents compared with Malaysian norms (Azman et al., 2003).

## 4.0 Discussion

This study provides a better understanding of HRQOL among Type 2 Diabetes Mellitus in Health clinics in Tampin district, Negeri Sembilan. It is understandable that patients with chronic disease, particularly Type 2 Diabetes Mellitus have been seen to have lower score of SF-36 as compared to the normal population. Similarly, this study found that Type 2 Diabetes Mellitus patients reported lower SF-36 scores in most of the domains in comparison to the normal population. This finding was consistent with other population studies, which showed that Type 2 Diabetes Mellitus was associated with deterioration in HRQOL (Porojan et al., 2012; Schunk et al., 2011; Kamarul Imran et al., 2010; Bennett et al., 2008). The findings reflected that Diabetes Mellitus causes some changes in the life of the patients.

Likewise, this study also found that SF-36 scores of the seven domains among uncontrolled Type 2 Diabetes Mellitus respondents to be significantly lower in comparison to the normal population scores ( $P < 0.001$ ), except in the role emotional domain score ( $P = 0.857$ ). In addition, the majority (60%) of the sample respondents claimed their health to be about the same as one year ago, suggesting no changes in perceiving general health status. In contrast, 22.1% reported that their health status was worse than that one year ago, and 17.9% reported to have better health status than that one year ago.

Type 2 Diabetes Mellitus has been related to impair physical HRQOL status. For instance, physical functioning domain has been indicated to be the most affected in having Type 2 Diabetes Mellitus linked with physical difficulties; consequently bothering daily activities and work abilities of those patients. The finding was consistent with the previous study in Japan by Saito et al. (2006) and a study by Tapp et al. (2006). It was suggested that patients' factors contributed to the deterioration of physical functioning domain (Nicolucci et al., 2009). This study indicated the presence of comorbidities and types of treatment regime as well as glycemic control status had a strong association to the all dimensions of QOL and physical component as being more pronounced.

This study revealed that the HRQOL score for role emotional domain was slightly above that of the Malaysian normal population. A relatively higher score in the mental component in this study also showed that mental health was less affected in Type 2 Diabetes Mellitus, giving an explanation of possible better adaptation and acceptance of the disease. Since Diabetes Mellitus has developed for many years in most of the participants, there is a better psychological adaptation towards the diabetes managements and long term disease complications. Other than that, being aware about the disease and having possible complications positively affected their quality of life (Anderson et al., 1993). Nevertheless, in contrasts, other studies found significantly lower role emotional score (Kalda et al., 2008; Saito et al., 2006; Tapp et al., 2006).

This study could not be generalised to the whole Malaysian population because one might argue that a sample drawn from only one district (Tampin) is not necessarily a representation of the whole country. The study sample were predominantly Malays and from rural area, aged about 60 years and above. The disproportionate representation limits the generalisability and interpretation of findings to other groups. It is suggested that further studies should be multi-centered and include a large number of respondents to increase the power of study. Thus, findings could be generalised to the whole population of diabetes mellitus in Malaysia.

## 5.0 Conclusion and recommendation:

HRQOL of Type 2 Diabetes patients are lower than that of Malaysian general population in all SF-36 domains, with the exception of role emotional. However, further studies using specific HRQOL scale in Type 2 Diabetes Mellitus would provide a more accurate assessment of QOL. Both physical and mental aspects should be considered into and interventions are planned accordingly, efforts to improve patients' health via individualized programme may alleviate the overall HRQOL.

## Ethical

This study obtained the approval from University Research Ethical Committee (JKEUPM), Universiti Putra Malaysia (JKK\_Mac (13) 03.). This study was in collaboration with Universiti Sains Islam Malaysia (USIM) grant. Grant code: USIM/ERGS-PSK-52-50511. Approved by Kementerian Kesihatan Malaysia (KKM) ethic: NMRR-11-751-9397.

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