Current Research in Diabetes & Obesity Journal
ISSN: 2476-1435

Juniper Publishers
key to the Researchers

Research Article
Volume 8 Issue 2 - July 2018
DOI: 10.19080/CRDOJ.2018.08.555731

Curre Res Diabetes & Obes J

Interactions between Diabetes and Baseline Characteristics of Study Subjects related to the Quality of Life

Masoud Mirzaei[1], Hossein Lashkardoost[2] and Andishe Hamedi[3]*

[1]*Department of Cardiology, Faculty of Medicine, Shahid Sadoughi University of Medical Sciences, Iran*

[2]*Department of Public Health, North Khorasan University of Medical Sciences, Iran*

[3]*MSc in Epidemiology North Khorasan University of Medical Sciences, Iran*

Submission: May 23, 2018; **Published:** July 23, 2018

***Corresponding author:** Andishe Hamedi, MSc in Epidemiology, Shirvan Center of Higher Health Education, North Khorasan University of Medical Sciences, Shirvan, Iran, Tel: +985832240524; Email: ahamedi1364@gmail.com

Abstract

Aim: Today, quality of life has attracted more attention and there is a relationship between disease and quality of life. This study was conducted to evaluate the interactions between Diabetes and baseline characteristics related to the quality of life of individuals.

Method: This cross-sectional study was carried out on a random sample of 7533 subjects, using the Health Survey data in Yazd. For assessing the quality of life, SF8 questionnaire was used. Data were analyzed by using, Mann-Whitney and logistic regression model in SPSS19.

Results: There were, significantly different between quality of life in diabetics and non-diabetics individual, and this relationship can be generalized to the subscales of quality of life (P<0.001). The effect of diabetes-related interactions with baseline characteristics of study subjects which affecting quality of life has shown that becoming old OR=3.3[95%CI:2.06-5.3], female OR=1.5[95%CI:1.02-2.2], being single OR=2.7[95%CI:1.6-4.5], being obese OR=1.9[95%CI:1.7-2.2] and having high blood pressure OR=6.4[95%CI:1.5-26.7] is associated with decreasing quality of life, and increasing the level of education has a significant role in improving the quality of life OR=0.08[95%CI:0.01-0.6].

Conclusion: Since diabetic patient had lower quality of life than non-diabetics. It is suggested, to promote the quality of life of patients; Health authorities should plan the solutions for supporting and promoting patients with diabetes` health.

Keywords: Quality of life; Diabetes mellitus; Risk factor; SF8

Abbreviations : QOL: Quality of Life; HDI: Human Development Index; DM: Diabetes Mellitus; NCDs: Non-Communicable Diseases (NCDs); SF8: Standard Form 8; BMI: Body Mass Index

Introduction

Diabetes mellitus (DM) is the most common endocrine disease in the world and is responsible for 4 million deaths per year. Overall, 9% of all deaths in the world caused by DM. DM cases will rise from 285 million in 2010 to 439 million in 2030 (54% growth). Globally, 371 million people and more than 4.4 million peoples in Iran are living with diabetes [1]. Prevalence of diabetes in Iran is third highest among the countries of the Middle East and North Africa. The prevalence of diabetes is not the same in different parts of the world. In developed countries most diabetics are older than 65 years old; however in developing countries the prevalence is higher among middle aged population [2]. Prevalence of diabetes in Yazd province, which is located in central of Iran, is 16.3% ranked first in Iran, also 22% of the Iranian population over 40 years of age have diabetes [3,4]. In a study conducted in 2011 in Iran, 35.1% increase in the prevalence of diabetes was reported [5]. Underlying causes of increase in DM, consisted of obesity, due to urbanization and aging population, so that is more dramatic in developing countries, including Iran [6].

Sedentary lifestyle and poor diet, body mass index (BMI)>30, low physical activity, smoking and blood pressure are modifiable risk factors of DM. In addition to these factors, uncontrollable factors such as age and sex are effective in diabetes [7]. Diabetes in all its forms imposes costs in human, social and economic

conditions in all countries and all income levels. Patients with diabetes are more than other people at risk of complications such as ocular disorders, cardiovascular disease, amputation and kidney failure [8]. Quality of life score can be used for general assessment of individuals and community health. Somehow the quality of life indicates status of people living in a country or region and individual understanding of their position in life that are linked to their goals and expectations [9]. Determinants of quality of life are factors including health, political stability and security, family life, community life, climate and geography, job security, political freedom and material [10]. Population health has been affected due to rising living standards, advances in public health and medical care and thus satisfaction, in various aspects of human life. Indicators of quality of life among 194 countries have been assessed on an annual basis.

According to the human development index (HDI) 2007-2008 published by the United Nations Development Program, countries with HDI values in the range of 0.5-0.8 had been categorized in the middle level of human development. Iran with a score of 0.759 had been in the medium human development level [11]. According to the quality of life in Iranian provinces, life index of each province have been studied in three states, these include economic, environmental and social factors. During the rankings, it has been observed that the provinces of East Azerbaijan, Khuzestan and Tehran have had the highest quality of life index and the provinces of Bushehr, Hamedan and Yazd, had the lowest score [12]. Many studies have worked on the quality of life in patients with diabetes and had shown that these patients had low quality of life [13,14]. Few studies investigate the association between diabetes and quality of life, including in central of Iran, Yazd and compare with general population. This study examined the interactions between Diabetes and baseline characteristics related to the quality of life of individuals. The results of this study can be used by health authorities to plan appropriate interventions, to increase the quality of life of general population and patients and reduce complications of DM in the population.

Subjects

This study was conducted on a random sample of 7533 men and women using the Health Survey data in Yazd during the years 2014-2015 (YaHS). Yazd health study (YaHS) has been the most comprehensive study on the health and disease community in Yazd province.

Materials and Methods

In this study, people were questioned about various aspects of physical and mental health in Yazd. The population of this study is people in age range of 20-70 years old in Yazd city and the sample size of this study is 7533 people. The subjects are from 5 age groups: 20-29, 30-39, 40-49, 50-59 years, and 60-69 years old. The sampling method is based on population and is a two stage clustering. In the first stage, 200 clusters were randomly selected from the regions of Yazd city. At the next stage, according to the list of households in 2014, the clusters were selected. Then, by moving from the right of the cluster computer letters response was completed. The choice of the next household was at the distance of one house from the first house, if there were several households on the same plaque (for example, an apartment), the information was collected from the first unit and was continuously referred to the subsequent units.

We took an informed consent before participating in the study. The tool used to collect information was using a Yazd health questionnaire and interviews. The questionnaire contained 300 questions in various fields including quality of life and underlying variables such as age, sex, level of education, history of diabetes. The questions of this questionnaire were designed with the participation and interaction of all university faculties and research centers. After several consecutive sessions, consultation with the professors, necessary amendments carried out and the validity of the questionnaire was confirmed. To determine the reliability of the questionnaire, a pilot study was done. 200 people from Yazd were randomly selected and 0.8 Cronbach's alpha was obtained. Finally, a final questionnaire was developed. Questions of quality of life section of Yazd people's health survey is based on standard form 8 (SF8) questionnaires. SF8 includes 8 scales (general health, physical functioning, physical pain, vitality, social function, mental health and emotional role); SF8 is a general measure of quality of life that can measure and compare quality of life across a wide range of different groups of patients or healthy people. Validity and reliability of this questionnaire have been confirmed. According to a study conducted by Ware et al. [15] in the field of ranking and reviewing the SF8 questionnaire, the score for each question is zero to one hundred and the score for each dimension of quality of life is zero to one hundred. Non-parametric test, Mann-Whitney was used in this study, because there were no normal conditions (non-normality of quality of life variable). Value less than 0.05 was considered as a significant level. Also, to investigate the relationship between other baseline characteristics of study subjects on quality of life and interaction between diabetes and baseline characteristics logistic regression model was used. In this method, quality of life was divided into two lower and upper categories and those who scored between zero and 75 were placed in the middle and lower quality of life category, and those with a score of above 75 were placed in the category of high quality of life. P value less than 0.05 was considered as a significant level and data was analyzed using $SPSS_{19}$ software.

Results

In this study, a total of 7533 subjects, including 49.7% males and 50.3% females, were studied. From them, there was 1146 diabetic patients (15.2%) and 6387 non-diabetic patients (84.8%). The demographic characteristic of the subject's shows in Table 1. In terms of quality of life, 64.1% of participants had high quality of life and 35.9% had a lower and middle level of quality of life. Relationship between quality of life and baseline

How to cite this article: Masoud M, Hossein L, Andishe H. Interactions between Diabetes and Baseline Characteristics of Study Subjects related to the Quality of Life. Curre Res Diabetes & Obes J. 2018; 8(2): 555731. DOI: 10.19080/CRDOJ.2018.08.555731.

characteristics of study subjects shows in Table 2. The results of this table presented that older age, males, low educational level, hypertension, obesity, smokers and people with low physical activity have lower quality of life.

Table 1: Demographic characteristics of the subjects.

Variables		Frequency	Percent
Age	20-29	1530	20.3
	30-39	1496	19.9
	40-49	1565	20.8
	50-59	1482	19.7
	60-69	1460	19.4
Sex	Male	3746	49.7
	Female	3787	50.3
Educational level	illiterate	2141	28.4
	Under diploma	2075	27.5
	Diploma	2154	28.6
	Academic	1163	15.4
Marriage status	Single	885	11.7
	Married	6648	88.3
Diabetics	No	6387	84.8
	Yes	1146	15.2
Quality of life	Moderate & Low level	3216	35.9
	High level	4317	64.1

Table 2: Relationship between quality of life and baseline characteristics of study subjects.

Variables		OR(95%CI)	P-Value
Age	20-29	1	
	30-39	2.05(0.6-6.8)	0.24
	40-49	1.9(0.5-6.5)	0.27
	50-59	3.6(1.1-11.07)	0.02
	60-69	5.03(1.7-14.8)	0.003
Sex	Female	1	
	Male	1.1(0.6-2.05)	0.51
Educational level	illiterate	14.2(1.9-105.4)	0.009
	Under diploma	10.7(1.4-80.3)	0.02
	Diploma	3.7(0.4-30.8)	0.21
	Academic	1	
Marriage status	Single	1.2(0.5-3.2)	0.6
	Married	1	
Diabetes	No	1	
	Yes	2.7(2.3-3.3)	<0.001
High blood pressure	No	1	
	Yes	2.6(1.5-4.5)	<0.001
BMI	Normal	1	
	Thin	0.8(0.5-1.5)	0.64
	Overweight	1.04(0.8-1.2)	0.65
	Obese	1.8(1.5-2.2)	<0.001
Physical activity (per week)	No	1	
	Yes	0.7(0.6-0.9)	0.005
Smoking	No	1	
	Yes	1.5(1.3-1.8)	<0.001

*Significantly at a level of 0.05

Quality of life in diabetics and non-diabetics individual was significantly different, and this relationship can be generalized to the subscales of quality of life (P<0.001). According to Table 2, diabetes is known as a risk factor for being placed on the lower and middle levels of quality of life. Diabetics were 2.7 times at higher chance of being placed in the lower and middle level of quality of life than non-diabetic patients. Mean values on subscales and summary components of the SF8 according to gender shows in Table 3. The effect of diabetes-related interactions with other factors affecting quality of life showed that physical activity (P=0.72) and smoking (P=0.07) had not positive interaction with quality of life. Interaction between diabetes and baseline characteristics of study subjects in relation to quality of life of individual show in Table 4.

Table 3: Mean and standard deviation values on subscales and summary components of the SF8 according to gender.

Dimensions of Quality of Life		M±SD
Physical function	Men	14.7±22.8
	Women	21.2±25
Limitation due to physical problem	Men	15.9±22.9
	Women	23.1±25.9
Physical pain	Men	21.7±25
	Women	30.8±27.3
general health	Men	28.1±21.7
	Women	33.6±22.3
Vitality	Men	29.5±23
	Women	35.1±24.3
Social Performance	Men	13.4±21.3
	Women	18±23.2
Emotional performance	Men	18.2±25
	Women	25.6±27.9
Mental health	Men	15.3±21.6
	Women	20.3±23.2

*Significantly at a level of 0.05

How to cite this article: Masoud M, Hossein L, Andishe H. Interactions between Diabetes and Baseline Characteristics of Study Subjects related to the Quality of Life. Curre Res Diabetes & Obes J. 2018; 8(2): 555731. DOI: 10.19080/CRDOJ.2018.08.555731.

Table 4: Interaction between diabetes and baseline characteristics of study subjects in relation to quality of life.

Variables		OR(95%CI)	P-Value
Age	20-29	1	
	30-39	2.02(0.8-4.8)	0.11
	40-49	2.1(0.9-4.5)	0.052
	50-59	2.9(1.6-5.03)	<0.001
	60-69	3.3(2.06-5.3)	<0.001
Sex	Male	1	
	Female	1.5(1.02-2.2)	0.03
Educational level	Illiterate	1.02(0.6-1.6)	0.92
	Under diploma	0.4(0.1-0.8)	0.01
	Diploma	0.08(0.01-0.6)	0.017
	Academic	1	
Marriage status	Single	2.7(1.6-4.5)	<0.001
	Married	1	
High blood pressure	No	1	
	Yes	6.4(1.5-26.7)	0.01
BMI	Normal	1	
	Thin	1.02(0.6-1.7)	0.93
	Overweight	1.3(1.1-1.5)	<0.001
	Obese	1.9(1.7-2.2)	<0.001
Physical activity (per week)	No	1	
	Yes	0.9(0.6-1.3)	0.72
Smoking	No	1	
	Yes	1.56(0.9-2.5)	0.07

*Significantly at a level of 0.05

Discussion

This study showed that the quality of life in diabetics and non-diabetics was significantly different, and this relationship can be generalized to the subscales of quality of life. So that people with diabetes had lower scores in terms of quality of life than non-diabetics. In general, people with diabetes had lower scores in both general physical and mental aspects of quality of life than non-diabetics. Such studies also confirm our findings [16,17]. People with diabetes face many physical, psychological and social problems that can lead to a decline in their quality of life. Diabetes mellitus complications can also reduce the quality of life of affected people. Diabetes mellitus treatments, such as insulin use, nutritional limitations in the daily lives of patients can reduce their quality of life. Contrary to our study, some studies have also shown that there is no significant relationship between quality of life scores in different subscales in the two study groups [18]. Also this research revealed more quality of life scores in women. Overall, men have a lower quality of life than women in this study; that may be related to lifestyle of women in Yazd. Most studies have showed as well; Even, such studies explain differences among anti-diabetes treatments between men and women [18,19]; so that men had lower QOL score than women. But after assessing the interaction between diabetes and gender on quality of life, it was found that the quality of life of women with diabetes is lower than that of men. However, some studies suggested better quality of life in men compared with women [20]. People whom married, had better quality of life after assessing the interaction between diabetes and marriage status, it was found that single people with diabetes also had lower quality of life which was statistically significant. Probably, better inhibition of the disease and its complications by patient due to emotional support from their family, can be substantial reason for this. Mohammadi [21] also confirms these findings. However, some studies in different cultures reported higher quality of life for single people [20]. Individuals with higher education had better quality of life. After assessing the interaction between diabetes and educational level in individual, it was found that people with higher education, although having diabetes, have a better quality of life and diabetes, have a negative effect on the quality of life of people with low levels of education. This result of our study was consistent with such studies [18,22,23]. Probably it may be because of their jobs; social condition and awareness about the disease and its preventive way, but some studies have indicated an inverse significant relationship between level of education and quality of life [24].

Increasing age in both-women and men- had lower quality of life in this study similar to some studies [25]. The quality of life starts to reduce with aging from age 40 years which may be due to physical, emotional and self-care limitations or chronic complications of Non-Communicable Diseases (NCDs). Several studies have shown that being obese, decreased physical activity, smoking, high blood pressure, as risk factors for diabetes mellitus. On the other hand, these factors had a significant impact on people's physical and mental health and were factors that affect the quality of life of individuals [26]. In the present study, it has also been shown that there is a positive interaction between diabetes and obesity and high blood pressure. People with hypertension and diabetes, as well as obese and diabetic people, have a higher chance of living in the lower level of quality of life. Such studies confirm this result [27-29]. Treatment for a medical condition may affect other existing illnesses, which leads to a further decline in quality of life. In addition, a medical condition (such as hypertension) may affect the behavior of the diabetic patient and thus has a negative effect on consequences of treatment. In the present study, there is a significant relationship between physical activity and quality of life in individuals. So that people who have physical activity during the week have a higher quality of life. Study conducted by Raphael confirms this result [30]. But no significant interactions between diabetes and physical activity of people with quality of life were observed. Also, there was a significant relationship between smoking status and quality of life in the study, so that smokers had a lower quality of life. A study conducted by Susan has reported similar result [31]. But no significant interactions

How to cite this article: Masoud M, Hossein L, Andishe H. Interactions between Diabetes and Baseline Characteristics of Study Subjects related to the Quality of Life. Curre Res Diabetes & Obes J. 2018; 8(2): 555731. DOI: 10.19080/CRDOJ.2018.08.555731.

between having diabetes and smoking people with their quality of life were observed.

There were some limitations in this study. The definition of diabetes in our study is based on the self-declaration of individuals. The main limitation of our study is its cross sectional design, it was impossible to show the cause-effect relationship; which just measure association not causation; Nevertheless, our study also has some advantages. This study is one of a large population-based study using appropriate sampling methods. Present study displayed the lower quality of life in patients with diabetes than non-diabetics. It is suggested, for promote the quality of life of this patient, health authorities should plan the solutions for supporting and promoting patients with diabetes` health. This planning could be including: appropriate diabetic care such as self-care and health education, family education, blood glucose management, mental and social support etc. Also for conducting more subsequent studies, it was suggested the research about the impact of suitable methods in promotion of all aspects of health in patients with diabetes.

Acknowledgement

We are grateful from people in Yazd-Iran for helping us in this study. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (in Shahid Sadoughi University of Medical Sciences) and with the Helsinki Declaration of 1964 and later versions. Informed consent was obtained from all patients for being included in the study.

Funding Statement

This study was funded by Shahid Sadoughi University of Medical Sciences (Grant number: 73941, Approval number: 73941, Date of approval: 11/06/2014) and from Yazd Health study.

References

1. Gimeno S, Ferreira S, Franco L, Hirai A, Matsumura L, et al. (2002) Prevalence and 7-year incidence of type II diabetes mellitus in a Japanese-Brazilian population: an alarming public health problem. Diabetologia 45(12): 1635-1638.
2. Javanbakht M, Abolhasani F, Mashayekhi A, Baradaran H, Jahangiri NY (2012) Health-related quality of life in patients with type 2 diabetes mellitus in Iran: a national survey. PLoS One 7(8).
3. Lotfi MH, Saadati H, Afzali M (2014) Prevalence of diabetes in people aged ≥30 years: the results of screening program of Yazd Province, Iran, in 2012. J Res Health Sci 14(1): 87-91.
4. Lotfi MH, Fallahzadeh H, Rahmanian M, Lashkardoost H, Hamedi A (2018) The role of clinical factors in the association of gestational diabetes amongst women aged 15-49 years residing in Yazd-Iran. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, Iran.
5. Esteghamati A, Etemad K, Koohpayehzadeh J, Abbasi M, Meysamie A, et al. (2014) Trends in the prevalence of diabetes and impaired fasting glucose in association with obesity in Iran: 2005–2011. Diabetes Res Clin Pract 103(2): 319-327.
6. Rahmani S, Zahirrodin A, Moradi M, Hoveida S, Nejati S (2014) Examining the effectiveness of mindfulness-based stress reduction program and conscious yoga on quality of life in patients with diabetes type 2. Iranian Journal of Diabetes and Obesity 6(4): 168-175.
7. Hadaegh F, Bozorgmanesh MR, Ghasemi A, Harati H, Saadat N, et al. (2008) High prevalence of undiagnosed diabetes and abnormal glucose tolerance in the Iranian urban population: Tehran lipid and glucose study. BMC public health 8(1): 176.
8. Liese AD, D'Agostino RB, Hamman RF, Kilgo PD, Lawrence JM, et al. (2006) The burden of diabetes mellitus among US youth: prevalence estimates from the search for diabetes in youth study. Pediatrics 118(4): 1510-1518.
9. Campolina AG, Pinheiro MM, Ciconelli RM, Ferraz MB (2011) Quality of life among the Brazilian adult population using the generic SF-8 questionnaire. Cadernos de Saúde Pública 27(6): 1121-1131.
10. Roberts B, Browne J, Ocaka KF, Oyok T, Sondorp E (2008) The reliability and validity of the SF-8 with a conflict-affected population in northern Uganda. Health Qual Life Outcomes 6(1): 108.
11. Valibeigi H, Panahi F (2010) Iran's position in the global economy compared with selected countries (In terms of human development index, economic freedom and business environment). Business reviews, Vol 43.
12. Fallahzade H, Dehghani TA, Dehghani TM, Hoseini F, Hoseini H (2011) Factors affecting quality of life after menopause in women. Journal of Shahid Sadoughi University of Medical Sciences 18(6): 552-558.
13. Williams SA, Shi L, Brenneman SK, Johnson JC, Wegner JC, et al. (2012) The burden of hypoglycemia on healthcare utilization, costs, and quality of life among type 2 diabetes mellitus patients. J Diabetes Complications 26(5): 399-406.
14. Co MA, Tan LSM, Tai ES, Griva K, Amir M, et al. (2015) Factors associated with psychological distress, behavioral impact and health-related quality of life among patients with type 2 diabetes mellitus. J Diabetes Complications 29(3): 378-383.
15. Ware JE, Kosinski M, Dewey JE, Gandek B (2001) How to score and interpret single-item health status measures: a manual for users of the SF-8 health survey. Quality Metric Incorporated 15(10): 5.
16. Vazirinejad R, Sajadi MA, Maghool N (2010) A historical cohort study assessing the effect of diabetes on the quality of life of patients. Pejouhesh dar Pezeshki 34(1): 35-40.
17. Ellis DA, Frey MA, Naar King S, Templin T, Cunningham P, et al. (2005) Use of multisystemic therapy to improve regimen adherence among adolescents with type 1 diabetes in chronic poor metabolic control: a randomized controlled trial. Diabetes Care 28(7): 1604-1610.
18. Saadatjoo S, Rezvanee M, Tabyee S, Oudi D (2012) Life quality comparison in type 2 diabetic patients and none diabetic persons. Modern Care Journal 9(1): 24-31.
19. Schultz AA, Winstead FP (2001) Predictors of quality of life in rural patients with cancer. Cancer Nursing 24(1): 12-19.
20. Kiadaliri AA, Najafi B, Mirmalek SM (2013) Quality of life in people with diabetes: a systematic review of studies in Iran. J Diabetes Metab Disord 12(1): 54.
21. Mohammadi S, Karim NA, Talib RA, Amani R (2016) Evaluation of quality of life among type 2 diabetes patients. International Journal of Community Medicine And Public Health 3(1): 51-56.
22. Redekop WK, Koopmanschap MA, Stolk RP, Rutten GE, Wolffenbuttel BH, et al. (2002) Health-related quality of life and treatment satisfaction in Dutch patients with type 2 diabetes. Diabetes care 25(3): 458-463.
23. Darvishpoor KA, Abed SZ, Yaghmaie F, Alavi MH, Montazeri A (2006) Survey correlation between quality of life and disease and demographic variables of diabetic patients referred to Tehran hospitals in 2004. Iranian Journal of Endocrinology and Metabolism 8(1): 49-56.

How to cite this article: Masoud M, Hossein L, Andishe H. Interactions between Diabetes and Baseline Characteristics of Study Subjects related to the Quality of Life. Curre Res Diabetes & Obes J. 2018; 8(2): 555731. DOI: 10.19080/CRDOJ.2018.08.555731.

24. Mohammad YP, Haririan H, Moghaddasian S, Ebrahimi H (2008) Surveying the quality of life and its dimensions among the type 2 diabetes patients referred to the Diabetes center of Tabriz university of medical sciences-1386. J Urmia Nurs Midwifery Fac 6(1): 26-37.

25. Didarloo A, Alizadeh M (2016) Health-related quality of life and its determinants among women with diabetes mellitus: a cross-sectional analysis. Nurs Midwifery Stud 5(1): e28937.

26. Jiang Y, Hesser JE (2006) Associations between health-related quality of life and demographics and health risks. Results from Rhode Island's 2002 behavioral risk factor survey. Health Qual Life Outcomes 4(1): 14.

27. Karlsson J, Sjöström L, Sullivan M (1998) Swedish obese subjects (SOS)-an intervention study of obesity. Two-year follow-up of health-related quality of life (HRQL) and eating behavior after gastric surgery for severe obesity. Int J Obes Relat Metab Disord 22(2): 113-126.

28. Wee HL, Cheung YB, Li SC, Fong KY, Thumboo J (2005) The impact of diabetes mellitus and other chronic medical conditions on health-related quality of Life: Is the whole greater than the sum of its parts? Health Qual Life Outcomes 3(1): 2.

29. Han T, Tijhuis M, Lean M, Seidell J (1998) Quality of life in relation to overweight and body fat distribution. Am J Public Health 88(12): 1814-1820.

30. Bize R, Johnson JA, Plotnikoff RC (2007) Physical activity level and health-related quality of life in the general adult population: a systematic review. Prev Med 45(6): 401-415.

31. Stewart ST, Cutler DM, Rosen AB (2009) Forecasting the effects of obesity and smoking on US life expectancy. N Engl J Med 361(23): 2252-2260.

DOI: 10.19080/CRDOJ.2018.08.555731

How to cite this article: Masoud M, Hossein L, Andishe H. Interactions between Diabetes and Baseline Characteristics of Study Subjects related to the Quality of Life. Curre Res Diabetes & Obes J. 2018; 8(2): 555731. DOI: 10.19080/CRDOJ.2018.08.555731.