ORIGINAL ARTICLE

ILLNESS ACCEPTANCE, DIABETES SPECIFIC DISTRESS AND QUALITY OF LIFE IN ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS

Rabab Zahra, Khawar Bilal Baig, Urooj Sadiq*

Riphah Institute of Professional and Clinical Psychology, Riphah International University, Lahore,
*Bahria University, Lahore Campus, Lahore, Pakistan

Objective: The objective of the current study was to investigate association between illness acceptance, diabetes specific distress and quality of life in adolescents suffering with type 1 diabetes mellitus. **Method:** Data was collected from 70 adolescents diagnosed with type 1 diabetes mellitus. Acceptance of Illness Scale, Diabetes Specific Distress, and Quality of Life Scale were used. **Results:** Illness acceptance had significant positive relationship with quality of life (QoL) and diabetes specific distress showed significant negative relationship with quality of life in adolescents with type 1 diabetes. Demographic variables (duration of illness, control over diabetes) and diabetes specific distress were highly significant predictors of QoL in adolescents with type 1 diabetes and there was a significant statistical difference between duration of illness and QoL in adolescents with chronic and recent type 1 diabetes mellitus. **Conclusion:** Adolescents with chronic and recent type 1 diabetes mellitus have illness acceptance which leads to better quality of life.
Keywords: Illness acceptance, diabetes specific distress, quality of life, Type 1 diabetes mellitus

INTRODUCTION

Diabetes Mellitus is a long-lasting disease that causes mortality and morbidity all over the world. Diabetes mellitus is most ordinary and fatal disease and in USA it's the greatest reason of death.[1] Diabetes mellitus acquired or inherited by defective insulin by pancreas or ineffective insulin deficiency increase glucose in the blood that damage many body systems specifically nervous system and blood vessels.[2] Type 1 Diabetes Mellitus is about 5–10% of all diabetes cases and lifelong treatment with insulin is essential. This disease can occur at any age, but its tendency is higher in adolescence. The tendency of this disease in female and male is similar in childhood, but after 15 years of age its tendency is 1.3 to 2.0-fold excess in male. Type 1 Diabetes is one of the types of diabetes which is rapidly increasing more commonly in children as compare to adult.[3]

It is projected by that near about 300 million people will suffer with disease by 2025.[2] According to the World Health Organization prevalence of diabetes at global level for those over 25 years of age is 10%, while in the Eastern Mediterranean the prevalence is 11%.[4] A survey was conducted in 2016 and 2017 according to it 26% of Pakistan total population is diabetic and almost 35 to 40 million children under the age of 20 are suffering from diabetes. According to the WHO Data collection total diabetic population prevalence is 12.9 million people while 9.4 million are diagnosed, 3.5 million are under diagnosed and 38 million persons are pre diabetic from which 20.0% women and 15.9% men are pre diabetic. It is alarming that Pakistan is the 7th largest country of the world with diabetic population and it will be the 4th largest country of the world by the year of 2030.[4]

Adolescence is a period of life which is influenced by many physical, hormonal and psychological changes. With type 1 diabetes they have an extra burden of managing of their diabetes. Psychological problems are more frequently reported among adolescents with type 1 diabetes. Adolescents with diabetes are at high risk for developing diabetes specific distress and poor quality of life and low level of their disease acceptance. There are much less researches conducted on this population with type 1 diabetes and that is why there is need to work on this domain to fulfil this gap. And the current study is an endeavour to fulfilling this gap.

The current research was conducted to help doctors and especially patients to understand how much illness acceptance and diabetes specific distress play an important influence in the quality of life of adolescents with chronic and recent type 1 diabetes. The core determination of the present research was to provide insight to social and clinical setting about illness acceptance and its influence on the quality of life of adolescents with type 1 diabetes.

The current research was examining the role of demographic variables such as, sex, education, social status, duration of illness and control over diabetes etc. which effecting quality of life. Because majority of the adolescents experienced numerous difficulties about their life. Therefore, it is essential to recognize the environment in which they live with their ethnic and societal contextual and all demographic background. However, an optimistic logic of illness acceptance is

essential for individual's growth in relations of communication, abilities, understanding and self-efficacy. Numerous researches investigated the influences of illness acceptances, diabetes specific distress and quality of life in both European and Asian nations. The objective of the current research was to observe the relationship between illness acceptances, diabetes specific distress and quality of life in adolescents with type 1 diabetes.

METHODOLOGY

It was a correlational research design study. The population for the present study was 70 Adolescents with chronic and recent type 1 diabetes mellitus in Lahore, Pakistan.

Participants who had already been diagnosed with type 1 diabetes mellitus with and without complications were included in the present study with age 13–19 years. Both male and females participants were included. Participants from public hospitals were included. Purposive sampling technique was utilized to recruit sample on the basis of G-Power analysis 70 Adolescents with chronic and recent type 1 diabetes mellitus were recruited in the study.

Approval from Institutional Research Committee of Riphah Institute of Clinical & Professional Psychology, Riphah International University Lahore was obtained. Permission to use the instrument in this research was obtained from original authors. Information sheet was provided to every participant for detail information about the study purpose and a consent form to participate in the study.

Acceptance of Illness scale was originally developed by Felton BJ et al[5]. Responses were scored ranged from 1–5 from strongly agree to strongly disagree respectively. Scores below 20 reflects low score and shows the poor or low level of acceptance of illness. Score between 20 and 30 shows moderate level of acceptance. The test has Chronbach alpha reliability 0.79–0.71. Its Urdu version was used in the present study.

Diabetes Distress Scale was originally developed by Fisher et al[6], in 2005. This scale was translated in Urdu by Kousar and Yousaf in 2014. This scale comprises of 17 items and it is a self-report scale. It has four sub scales. On a 6 point rated scale responses ranged from 1 to 6 (not a problem to serious problem). The value of Chronbach reliability of this scale was 0.76–0.89.

Diabetes Quality of Life for Youth (DQLY) is a Particular tool detailed scale for the assessment of QOL of diabetic adolescents. This was developed by Delamater[7]. The scale has total 22 items and 6 domains. Each question or statement used a Likert scale range from 0 to 4 respectively. No cut off score, the lowest value indicates the better Quality of life. The present

study found reliability of Diabetes Quality of Life for Youths in Urdu version was (α=0.83). Quality of Life for Youths in Urdu version was translated by author according to MAPI Guidelines.

The data was analyzed using SPSS-21. Descriptive statistical analysis, Pearson product moment correlation analysis, Independent sample t-test and Hierarchal regression analysis were used in the present study.

RESULTS

Results showed illness acceptance has significant positive relationship with quality of life. Diabetes specific distress showed a significant negative relationship with quality of life. There was significant reliable difference between duration of illness and quality of life. Diabetes specific distress was significant predictor of quality of life in chronic and recent type 1 diabetes mellitus patients.

Illness acceptance had significant positive relationship (p=0.01) with quality of life in chronic and recent type 1 diabetes patients. Diabetes specific distress had significant negative association (p=0.01) with quality of life in adolescents with type 1 diabetes patients. (Table-1).

Table-1: Pearson Product Moment Correlation analysis between study variables (n=70)

Variables	1	2	3	Mean±SD
Illness Acceptance	-	0.46[**]	0.52[**]	22.95±6.64
Diabetes Specific Distress	-	-	-0.52[**]	56.65±11.71
Quality of Life	-	-	-	37.84±10.72

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

First model was found highly significant prediction F $(18,51)$=1.71, p<0.005, R^2=37 and accounted for 37% of variance in quality of life. Second model showed non-significant prediction F $(19,50)$=2.16, p>0.005, R^2=0.45 and accounted for 45% of variance in quality of life. Last model showed highly significant prediction F $(20,49)$=2.55, p<0.005, R^2=0.51 and accounted for 51% of variance in quality of life. (Table-2).

Table-2: Hierarchal regression analysis predicting quality of life on illness acceptance, diabetes specific distress and quality of life in adolescents with type 1 diabetes (n=70)

Predictors	Diabetes Type 1 Patients	
	ΔR^2	β
Step 1	15***	
Duration of Illness		-0.34*
Control Over Diabetes		0.37***
Step 2	24	
Illness Acceptance		-0.20
Step 3	31***	
Diabetes Specific Distress		0.33***
Total R^2	51%	

*p<0.05, **p<0.01, ***p<0.001

An equal variances *t*-test revealed a statistical significant difference between the mean of duration of illness for recent patients' quality of life score (42.51±8.89) and chronic patient's quality of life score (34.52±10.64), *t*=3.24, *p*=0.00, α=0.05. (Table-3).

Table-3: Independent sample *t*-test between demographic variable gender and study variables (n=70)

Duration of Illness	*t*	df	*p*	CI	
				LL	UL
Quality of Life	3.24	67	0.00	3.06	12.92

LL=Lower Limit, UL=Upper Limit

DISCUSSION

Results of present study indicated that illness acceptance has significant positive relationship with quality of life. Diabetes specific distress had a significant negative relationship with quality of life. There were significant reliable differences between duration of illness and quality of life. Diabetes specific distress was the significant predictor of quality of life in chronic and recent type 1 diabetes mellitus patients.

There is a significant positive relationship with the quality of life of adolescents with type 1 diabetes. Chabowski *et al*[8] also concluded similarly. They examined the relationships of both variables illness acceptance and quality of life. Their findings showed the significant positive correlation between acceptances of illness with all the domains of quality of life in lung cancer patients. In another research Rogon *et al*[9] found that illness acceptance is higher in youth compare to older people. They also found positive relationship between illness acceptance and diabetes specific distress. Type 1 diabetes negatively affects the quality of life of patients. The acceptance of illness is dependent upon age.

We found that diabetes specific distress has significant negative relationship with quality of life of adolescents with type 1 diabetes. Previous researches support the findings of the current study. A study with similar result was conducted to examine the relationship between quality of life, health status and psychological distress in diabetic patients. Their results revealed that diabetic patients had low level of quality of life in all domains of life compare to normal population.[10] Another research conducted by Simon Ak, *et al*[11] determined important sources of diabetes specific distress, and whether higher levels of diabetes distress was linked with impaired quality of life in children with type 1 diabetes, concluded that there is negative association generic quality of life and diabetes specific distress.

Results of the current study revealed that diabetes demographic variables, duration of illness, and control over diabetes and diabetes specific distress were highly significant predictors of quality of life of adolescents with chronic and recent type 1 diabetes. Tahir, *et al*[12] revealed similar results that demographic variables (duration of illness, control over diabetes) and disease characteristics were found to be statistically significant to affect quality of life whereas upon regression educational status, type of therapy and glucose control were the influencing factors.

Chew, *et al*[13] worked to study the association between diabetes specific distress and quality of life in adult patients with diabetes. Their findings showed that diabetes specific distress had significant effect on quality of life. One more study conducted by Iqbal, *et al*[14] with similar results concluded that age, duration of illness, number of prescribed drugs, medication adherence, and treatment satisfaction were significant predictors of quality of life among diabetic patients. Results of the present study showed significant difference between duration of illness and Quality of Life of adolescents with chronic and recent type 1 diabetes. Another research[15] was conducted to describe and analyse quality of life with 15−34 years age of onset and duration of illness as 1, 8, 15 and 24 years compared with controlled persons matched for age, sex, and country of residence. According to their results there were significant differences found between said variables.

CONCLUSION

The findings of present study showed adolescents with chronic and recent type 1 diabetes mellitus have better illness acceptance which leads to better quality of life.

LIMITATIONS & RECOMMENDATIONS

The sample size was small for better understanding; a larger sample size would allow researchers to have more data to analyze and provide even better understanding. Use of questionnaires in local/cultural language is suggested for such studies.

ACKNOWLEDGEMENT

REFERENCES

1. CDC. National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2005. Atlanta, GA: US Department of Health and Human Services, CDC; 2005. Available from http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2005.pdf.
2. King H, Aubert RE, Herman WH. Global burden of diabetes, 1995−2025: prevalence, numerical estimates, and projections. Diabetes Care 1998;21(9):1414–31.
3. Humphrey ARG, Zimmet PZ, Hamman RF. The epidemiology of diabetes mellitus. In: Marshall SM, Home PD, Rizza R, (Eds). Diabetes Annual. Amsterdam: Elsevier; 1998.p 1–31.
4. World Health Organization. Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications. Part 1:

Diagnosis and Classification of Diabetes Mellitus. 2 ed. Geneva: WHO/NCD/NCS/99; 2011.

5. Felton BJ, Revenson TA. Coping with chronic illness: A study of illness controllability and the influence of coping strategies on psychological adjustment. J Consult Clin Psycho 1984;52:343–53.

6. Fisher L, Glasgow RE, Mullan JT, Skaff MM, Polonsky WH. Development of a Brief Diabetes Distress Screening Instrument. Ann Fam Med 2008;6:246–52.

7. Delamater AM. Quality of life in youths with diabetes. Diabetes Spectr 2000;13:42.

8. Chabowski M, Polański J, Jankowska-Polanska B, Lomper K, Janczak D, Rosinczuk J. The acceptance of illness, the intensity of pain and the quality of life in patients with lung cancer. J Thorac Dis 2017;9(9):2952–8. doi:10.21037/ jtd.2017.08.70

9. Rogon I, Kasprzak Z, Szcześniak Ł. Perceived quality of life and acceptance of illness in people with type 2 diabetes mellitus. Prz Menopauzalny 2017;16(3):79−85. doi: 10.5114/pm.2017.70583.

10. Papathanasiou A, Shea S, Koutsovasilis A, Melidonis A, Papavasiliou E, Lionis C. Reporting distress and quality of life of patients with diabetes mellitus in primary and secondary care in Greece. Ment Health Fam Med 2008;5(2):85–93.

11. Simon AK, Vargese SS, Mathew E, Akshay KR, Abraham J. Diabetes related distress in adults with type 2 diabetes mellitus: a community-based study. Int J Community Med Public Health 2019;6(1):151–5.

12. Tahir M, Noman-ul-Haq, Naseem A, Riaz S, Ghulam R. Assessment of health related quality of life, HRQoL of diabetic patients using Euro-QoL-5D instrument in Quetta, Pakistan. Indo Am J Pharm Sci 2017;4(9):2939–48. doi: 10.5281/ zenodo.892235.

13. Chew BH, Mohd-Sidik S, Shariff-Ghazali S. Negative effects of diabetes-related distress on health-related quality of life: an evaluation among the adult patients with type 2 diabetes mellitus in three primary healthcare clinics in Malaysia. Health Qual Life Outcomes 2015;13:187. doi:10.1186/ s12955-015-0384-4

14. Iqbal Q, Ul Haq N, Bashir S, Bashaar M. Profile and predictors of health-related quality of life among type II diabetes mellitus patients in Quetta city, Pakistan. Health Qual Life Outcomes 2017;15(1):142. doi:10.1186/s12955-017-0717-6.

15. Sparring V, Nyström L, Wahlström R, Jonsson PM, Östman J, Burström K. Diabetes duration and health-related quality of life in individuals with onset of diabetes in the age group 15–34 years —a Swedish population-based study using EQ-5D. BMC Public Health 2013;13(1):377.

Address for Correspondence:
Rabab Zahra, Riphah Institute of Professional and Clinical Psychology, Riphah International University, Lahore, Pakistan.
Email: zahrarabab@yahoo.com

Contribution of Authors:
RZ: Conception of idea, data collection and analysis, initial script writing
KBB: Supervision, review of the script
US: Data analysis and manuscript review