Hope as Predictor of Psychological Distress and Quality of Life Among Diabetic Patients

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Abstract
The current study was conducted to find out the relationship between psychological distress, hope, and quality of life among diabetic patients. In the present research, the correlational research design was used and 180 diabetic patients (90 males and 90 females) were selected through purposive sampling techniques from the different hospitals of Faisalabad city. The age range of the selected sample was 20 years to 70 years. A demographic information sheet and the translated versions of the Kessler Psychological Distress Scale, Hope Index, and Quality of Life Scale were used to measure study variables. The data was analyzed through the Statistical Package for Social Sciences (SPSS). The results reveal that the psychological distress was significantly negatively correlated with Hope and Quality of Life but Hope and Quality of Life were significantly positively correlated. Further, linear regression analysis showed that Hope was a significant predictor of psychological distress and Quality of Life in diabetic patients. The t-test analysis indicates that females have significantly higher scores on psychological distress as compared to male diabetic patients. The younger patients score higher on psychological distress, hope, and quality of life as compared to older diabetic patients. The findings of the current study imply various health-related fields such as health professionals can use the findings of this study in the cure of patients who become the victim of life-threatening chronic illnesses like diabetes etc.
Keywords: Hope, Psychological Distress, Quality of Life, Diabetes Disease

1. Introduction

Health psychology investigates the psychological and behavioral dimensions of health, illness, and medical treatment. Its objective is to understand how behavioral, cultural, and psychological factors influence health and disease across a person's life, complementing the biological factors understood in medical sciences. Health psychology explores a range of medical conditions such as diabetes, respiratory problems, cancer, hepatitis, cardiovascular issues, and digestive diseases. This emerging field investigates how psychological factors influence individuals' capacity to maintain health, the origins of illnesses, and strategies for patient treatment when illness occurs. It is a dynamic and evolving area of study that delves into the psychological aspects impacting health maintenance, illness causation, and patient care (Leventhal et al., 2008).

Hope shows a vital part in the recovery of mental health and is a significant concern for patients grappling with mental illness. Consequently, tools designed to measure hope could prove invaluable in clinical practice and research endeavors (Caring Science, 2010). Depression and anxiety, which are forms of psychological stress, exert a detrimental effect on chronic diseases. For individuals with serious illnesses like diabetes, the presence of depressive symptoms notably diminishes their health-related quality of life (Ali et al., 2010). The study explored strategies for maintaining mental health under conditions of severe stress and chronic illness, highlighting the role of hope in enhancing psychological well-being (Folkman & Geer, 2002; Snyder et al., 2002).

Past study explored strategies for maintaining mental health under conditions of severe stress and chronic illness, highlighting the role of hope in enhancing psychological well-being (Folkman & Geer, 2002; Horwitz, 2002) even during chronic illness. Past research also reported that hope is also protective factor against psychological distress during pandemic (Flesia et al., 2023). The former focuses on enhancing, maintaining, and optimizing health, while the latter focuses on alleviating anxiety, depression, and other aspects associated with chronic illness. Consequently, here is an increasing curiosity in investigating optimistic emotions, such as psychological well-being fostered by a positive approach to living with chronic illness (Folkman & Geer, 2002). The term "quality of life" encompasses various aspects ranging from the community's overall well-being to health status and medical care (Rapley, 2003).

In health research, quality of life encompasses not only the functional impact of health but also subjective feelings related to lifetime fulfillment, cheerfulness and over all importance individual spaces on existence at a certain time. The former emphasizes enhancing, maintaining, and optimizing health, while the latter focuses on mitigating anxiety, death anxiety, depression, and other challenges associated with chronic illness (Adeeb et al., 2017; Alshelleh et al., 2023). Consequently, there is increasing interest in exploring positive emotions, such as the psychological well-being fostered by a constructive approach to living with a chronic disease (Folkman & Geer, 2002). The concept of "quality of life" encompasses diverse aspects, ranging from community well-being to health status and medical care (Rapley, 2003). In health research, quality of life includes not just the functional impact of health, but also subjective experiences related to life satisfaction, happiness, and the broader significance an individual attributes to life at a specific moment (Cella & Nowinski, 2002).

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Research indicates that individuals with diabetes may face elevated risks of mental obstacles. Readings investigating misery and fretfulness among those with diabetes have generated varied findings. A latest study directed by the World Health Organization crossways 17 nations discovered that persons identified with diabetes face an increased risk of developing the condition of depression and anxiety compared to those without diabetes (Lin & Korff, 2008). However, these rates were found to be lower than what smaller clinical studies had previously suggested. Alternative study stated merely a somewhat augmented probability of despair between individuals with type 2 diabetes associated to persons deprived of diabetes (Nichols & Brown, 2003). Researchers have identified depression, anxiety, suicidal tendencies, and aggressive behavior as the primary emotional challenges faced by individuals with diabetes. Depression is particularly prevalent, affecting approximately one in five people with type 2 diabetes (Najmeh, 2011).

Despite variations in causes and commonness, it is crucial to identify and address symptoms of mental ailments in individuals with diabetes. Living with diabetes can introduce challenges that may initiate a negative cycle, leading to reduced motivation, less proactive self-care, elevated blood sugar levels, heightened risk of complications, and diminished quality of life (Rubin & Peyrot, 2001). Research indicates that women with type II diabetes are more prone to psychological issues such as depression and anxiety compared to men. One study found that depressive symptoms were more prevalent among females both in the general population and among diabetic patients (Egede, Zheng, & Simpson, 2012). Further study lead by Mazloomy et al. (2008) reported that in Yazd, 64% of type 2 diabetes patients experienced depressive disorders, with 70.4% of women and 48% of men affected. The incidence of despair was especially greater among females than men.

In a prior study involving 216 middle-aged adults, those who expressed positivity and happiness exhibited 32% lower blood cortisol levels compared to individuals who reported feeling unhappy and viewing life as lacking meaning. Elevated cortisol levels are commonly linked to the onset of type II diabetes and hypertension. The researchers stressed that maintaining a positive mental outlook can influence daily cortisol levels, fibrinogen levels, blood pressure, and heart rate, especially during times of anticipation or challenges, highlighting the correlation between happiness and health (Steptoe, Wardle & Marmot, 2005).

In a study focusing on young individuals with diabetes, Helgeson and Novak (2007) discovered that the centrality of illness (how deeply the illness is integrated into one's self-concept) correlated with improved health outcomes only when negative emotions were minimal. How individuals interpret their illness, whether positively or negatively, can impact their self-perception and overall quality of life (Helgeson & Novak, 2007). Research conducted by Varghese et al. (2015) indicated that male diabetic patients generally experience higher quality of life and are less prone to depression and anxiety compared to female patients (Varghese & Salini, 2007; Abraham et al., 2015). According to Kauffman (2006), gender also plays a role in diabetes-related quality of life, with men often reporting higher satisfaction than women (Kauffman et al., 2006).

Previous researches designate that younger patients tend to exhibit a carefree, optimistic outlook on life. Research focusing on young individuals with diabetes suggests that they enjoy a comparable quality of life to their non-diabetic peers. Additionally, patients under 65 years old generally report higher QOL compared to older patients (Lori, 2003). Findings from a study conducted in Mexico highlight that educational attainment and a positive attitude significantly correlate with improved outcomes in psychological and social domains among male patients. Men with higher education levels and a strong positive outlook are more likely to demonstrate enhanced performance in these areas (Martinez, 2008).

The Objective of this study was to examine the correlation between psychological distress, hope and quality of life among diabetic patients.

How psychological distress, quality of life, and hope affect the diabetic patient. A person who has a poor quality of life in any area of life and is weak in hope than a person who faces more psychological problems or psychological distress in life. Those people suffer from chronic illnesses if they adopt a healthy lifestyle or a healthy quality of life (QOL) and hope (want to achieve desired goals) for health and future they can cope with their health problems and healthily spend their life.

1.1. Hypothesis of Study

- There would be significant negative correlation between the psychological distress, hope and quality of life among diabetic patients.
- Hope would be a significant predictor of psychological distress and quality of life among diabetic patients.
- There would be a high level of psychological distress in females among diabetes patients.
- There would be a high level of quality of life in males among diabetic patients.

2. Method

2.1. Research Design

This study used a cross-sectional correlational research design to examine the relationships between variables.

2.2. Participants & Sampling Technique

The study's sample was chosen through purposive sampling. The 180 diabetic patients were taken from several public and private hospitals in Faisalabad city. The age range of the selected sample was between 20 to 70 years.

2.3. Instruments

For assessing psychological distress, hope, and quality of life following Instrument were used for data collection:

2.4. Demographic Information Sheet

A demographic information sheet was developed through which the information necessary about the participant's name, age, gender, marital status, no of children, family system, duration of illness, and residency were also clearly communicated in written form.

2.5. Kessler Psychological Distress Scale

This Scale (K10) consists of 10 items that evaluate emotional states associated with symptoms of anxiety and depression experienced over the past 4 weeks. These symptoms encompass feelings of tension, worthlessness, hopelessness, restlessness, and sadness. Participants rate their responses on a scale from 1 (none of the time) to 5 (all of the time). The scale demonstrates high reliability, with Cronbach's alpha coefficients ranging from 0.89 to 0.91 (Kessler et al., 2003).

2.6. Herth Hope Index

The Herth Hope Index (HHI), translated into Urdu by Noreen et al. (2023), measures the degree of hope, defined as the anticipation of attaining desired objectives. This scale comprises 12 statements rated on a Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), with items 6 and 3 scored in reverse. The scale demonstrates strong test-retest reliability, showing correlation coefficients between 0.82 and 0.88 (Herth, 1992).

2.7. Quality of Life Scale

The Quality of Life (QOL) Scale, translated into Urdu by Parveen (2013), assesses participants' quality of life and daily experiences based on Flanagan's (1970) framework. Responses range from 1 ("terrible") to 7 ("delighted"). It demonstrates strong internal consistency ($\alpha = 0.82$ to 0.92), excellent test-retest reliability ($r = 0.78$ to $r = 0.84$), and robust convergent and discriminant validity.

2.8. Procedure

The study was carried out to investigate the psychological distress, hope, and quality of life among diabetes patients. Initially, intuitional approval was obtained from the faculty research committee. The sample was approached directly by the researcher. The sample was selected according to our set criteria of the required sample, total number of participants was (N = 180), consisting of males (n =90) and females (n =90) diabetic patients. After that according to American Psychological Association (APA) ethical guidelines, concerned authorities (medical superintendents of hospitals) debriefed about the purpose and procedure of this study. After obtaining the permission, patients were personally approached. Informed consent and demographic sheets were provided to the participants. Urdu-translated versions of scales were used in this study to increase the understanding and interest of participants. Participants were provided with comprehensive instructions regarding the instruments and response formats. They were assured that their privacy and confidentiality would be respected, with their data utilized solely for research purposes. Upon completion of data collection, participants were warmly welcomed, thanked for their cooperation, interest, and valuable time. Subsequently, statistical analyses were performed to test hypotheses using the Statistical Package for Social Sciences (SPSS).

3. Results and Discussion

Table 1: Frequencies and Percentages of the Demographics Characteristic of the Participants (N=180).

Variable	F	%
Gender		
Male	90	50
Female	90	50
Education		
Illiterates	30	16.7
Primary to middle	53	29.4
Metric to Under graduation	66	36.7
Graduation to post graduation	31	17.2
Age		
20 to 40	124	68.9
41 to 70	56	31.1
Duration of illness		
1 to 5 years	149	82.8
6 to 15 years	29	16.1
16 to 25 years	2	1.1
Marital Status		
Unmarried	30	16.7
Married	150	83.3

Family System		
Nuclear	121	67.2
Joint	59	32.8
Residence		
Rural	97	53.9
Urban	83	46.1

Table 1 depicts frequencies and percentages of demographic characteristics of the sample concerning group according to their gender, education, age, duration of illness, marital status, family system, and residency. The table showed that 90 (50%) males and 90 (50%) females participated in this research. The participants were also divided according to their education level, 30 (16.7%) individuals were illiterate, 53 (29.4%) were primary to the middle, 66 (36.7%) metric to undergraduate, and 31 (17.2%) were graduate to post-graduate. The 146 (81.1%) individuals were in the age range of 20 to 40 years and 34 (18.9%) individuals were in the age range of 41 to 70 years old. 149 (82.8%) people indulged in diabetes from 1 to 5 years, 29 (16.1%) people were facing diabetes from 6 to 15 years, and only 2 (1.1%) people with diabetes from 16 to 25 years. In this sample 30 (16.7%) individuals were unmarried and 150 (83.3%) were married. The 121 (67.2%) persons belong to the Nuclear Family System and 59 (32.8%) individuals belong to the Joint Family System. On the other side, 97 (53.9%) individuals were from rural areas and 83 (46.1%) individuals were from urban sides.

Table 2: Psychometric Properties of Study Variables (N =180).

Variables	N	M	SD	A	Range Potential	Actual	Skewness	Kurtosis
PD	180	27.09	7.29	.89	10 -50	14- 47	-.48	.46
H	180	36.08	3.90	.78	12-84	21 – 43	- 1.04	1.91
QOL	180	77.94	11. 47	.74	16-112	45- 101	-.71	.07

Note. PD = psychological distress; H = hope; QOL = quality of life.

The above table confirms the alpha reliabilities of the scales were .89 on the Psychological distress scale, .78 on the Hope index, and .74 on the QOL scale. This shows satisfactory internal consistency of all scales.

Table 3: Correlation Matrix among Diabetic Patients for all Variables (N = 180)

Variables	1	2	3
1-PD	--	-.63**	-.47**
2-HOPE		--	.69**
3-QOL			--

Note. **$p < .01$, PD = Psychological Distress; H = Hope; QOL = Quality of Life

The results of table 3 shows psychological distress is negatively related with Hope ($r = -.63**$, $p< .01$) and also with the quality of life ($r = -.47**$, $p< .01$). On the other side, Hope and Quality of Life are positively correlated with each other ($r =.69**$, $p< .01$).

Table 4: Predicting role of hope in psychological distress among diabetic Patients (N=180)

			Psychological Distress
Predictors	**B**	**β**	**95% CI**
Constant	91.07**		[70.16, 111.99]
Hope	-1.68**	-.62	[2.23, -1.12]
R^2	38.6		
F	36.41**		

**$p <.01$; β for regression coefficient; CI for Confidence interval

Table no. 4 proposes that a significant 38.6 % of the variance in psychological distress can be attributed to a model comprising of hope as predictor {$F (1, 178) = 36.41$, $p < .001$}.

Table 5: Predicting role of hope in quality of life among diabetic Patients (N=180)

			Quality of Life
Predictors	**B**	**β**	**95% CI**
Constant	-0.81**		[-22.91, 21.28]
Hope	2.09**	.68	[1.50, 2.68]
R^2	46.7		
F	50.75**		

The result also shows a significant 46. 7 % of the change in Quality of life could be credited by a model of including hope as a predictor variable $F (1, 178) =50.75.$, $p < .001$}.

Table 6: Comparison of Males and Females on Psychological Distress, Hope and Quality of Life among Diabetic Patient (N =180)

Variables	Male (n= 90)		Female (n = 90)		T	P	95%CI		Cohen's d
	M	SD	M	SD			LL	UL	
PD	24.77	6.11	31.90	12.17	-2.88	.006	-12.11	-2.16	0.21
Hope	38.81	2.78	35.84	4.08	3.30	.002	1.17	4.77	0.11
QOL	80.77	7.76	74.14	13.76	2.31	.025	.87	12.41	0.14

Note: *p<.05, **p<.01, PD = Psychological Distress, QOL = Quality of Life, CI=Confidence Interval, LL=Lower Limit, UL=Upper Limit

Table 5 shows the Mean, standard deviation, and t-values for male and female diabetic patients on psychological distress, hope, and quality of life. The findings indicate significant negative mean differences in PD {t (178). -2.88 =, p < .01}. The findings indicate that female patients significantly scored higher on psychological distress as compared to male patients. The findings indicate significant mean differences on Hope {t (178) =3.30, p < .01}. The findings show that male patients significantly scored higher on hope as compared to female patients The findings also indicate significant mean differences in QOL [t (178) 2.31 =, p <.05]. The findings also show that male patients significantly scored higher on QOL as compared to female patients.

4. Discussion

The objective of this study was to explore the relationship between the psychological distress characterized by symptoms (depression, anxiety), hope, (ability to produce pathways to achieve desired), and quality of life (general well-being of any individuals) among the diabetes patients. Psychological distress is the common issues that occur in severe illness, (cardiovascular diseases, lung diseases, cancer, hepatitis, diabetes, and many other serious types of diseases).

The first hypothesis of the study states that "there would be a significant negative correlation between the psychological distress, hope, and quality of life among diabetic patients. Meanwhile the hope and quality of life are positively correlated with another. This hypothesis is supported by results that are significant at (p < 0.01) level. It is clear from the results that there is a highly significant relationship between psychological distress, hope, and quality of life. It shows that if psychological distress increases then hope and quality of life decrease. In Pakistani culture, many people experience significant psychological distress due to inadequate economic opportunities. This lack of economic stability gradually increases psychological suffering, leading to diminished hope and quality of life among individuals. Factors such as education levels, family dynamics, and the duration of illness also contribute to this distress. Those grappling with chronic illnesses often experience heightened feelings of anxiety, depression, hopelessness, and frustration. Both frustration and hopelessness play crucial roles in exacerbating psychological distress, when individuals experience frustration and loose hope, their quality of life inevitably decline. While psychological distress leads toward dissatisfaction with life (Sher et al., 2023). Furthermore, the hope play to enhance the quality of life and make a person less frustrated. Literature demonstrates that a decline in quality of life can significantly impact individuals, often leading to issues such as sleep disturbances, financial challenges, altered eating patterns, and decreased sexual activity (Majani et al., 1999). Previous studies have indicated that individuals with a higher quality of life and a hopeful, optimistic outlook tend to employ more effective coping mechanisms and possess greater resources to deal with stress and challenges (Scheier et al., 1999). Hope fosters a belief that one's attitudes and actions can positively influence their health. Research has demonstrated that optimistic expectations about health, including hope and optimism, are advantageous as they encourage healthy behaviors, enhance adherence to treatment, and boost motivation to engage in beneficial health practices like regular exercise and maintaining a balanced diet (Salovey et al., 2000). The second hypothesis of the current study states that hope would be a significant predictor of psychological distress and quality of life among diabetic patients. The linear regression is used for testing this hypothesis. This hypothesis is supported by results that are significant at (p < 0.01). It is clear from the results that there is a significant effect of hope on psychological distress and quality of life in diabetic patients. In the diabetes population, the finding of this study suggests that a significant 38.6 % of the variance in psychological distress can be attributed to a model comprising hope as a predictor. In other hand, result also shows significant 46.7 % of the variance in Quality of life can be attributed to a model comprising hope as a predictor.

The third hypothesis of the current study states that there would be a high level of psychological distress in females as compared to male diabetes patients. The t-test is used for testing this hypothesis. The findings indicate significant negative mean differences in PD {t (178). -2.88 =, p < .01}. The findings indicate that female patients significantly scored higher on psychological distress as compared to male patients. Further, the findings indicate significant mean differences on Hope {t (178) =3.30, p < .01}. The findings show that male patients significantly

scored higher on hope as compared to female patients The findings also indicate significant mean differences in QOL [t (178) 2.31 =, p <.05]. ChatGPT

The findings also indicate that male patients consistently achieved higher scores in quality of life compared to female patients. Previous studies have consistently documented higher levels of psychological distress among women across various countries (Caron & Liu, 2011; Jorm et al., 2005; Phongsavan et al., 2006) and across all age groups (Cairney & Krause, 2005; Darcy & Siddique, 1984; Myklestad, Roysamb & Tambs, 2011; Paul, Anis & Ebrahim, 2006; Walters, McDonough & Strohschein, 2002). Additionally, research has shown a strong association between gender and psychological distress such as depression and anxiety, with women experiencing greater psychological stress compared to male patients (Roupa et al, 2009). Furthermore, within Pakistani culture, men are often perceived as dominant while women are stigmatized as being hopeless, helpless, and more emotionally sensitive. Women typically fulfill roles as primary caregivers and homemakers, bearing heavier responsibilities compared to men. Consequently, women in Pakistani society endure higher levels of psychological stress than their male counterparts.

5. Conclusion

The present study aimed to find out the relationship between psychological distress, hope, and quality of life among diabetes patients. The results depicted that there was a negative relationship between psychological distress and hope. The result also depicted the positive relationship of hope with quality of life. It means that when the psychological distress increases then the hope and quality of life decrease. Furthermore, the results of linear regression show that psychological distress is a significant negative predictor of quality of life and hope. The t-test findings also indicate that female diabetic patients significantly scored higher on psychological distress as compared to male diabetic patients

5.1. Limitations and suggestions

In the present study, the sample was not enough, and due to time limitations, the sample was collected from a few hospitals in Faisalabad City. Therefore, it is recommended that the sample size should be increased at a large scale and data collected from several areas of the country to enhance the generalization of the study results. Further, the researchers researching the same or similar variables should ensure more control conditions and use different methods of investigation.

5.2. Implications of the study

The findings of the current study imply various health-related fields such as health professionals can use the findings of this study in the cure of patients who become the victim of life-threatening chronic illnesses like diabetes etc. This study's findings can be used to improve and attain psychological treatments, particularly based on a cognitive-behavioral framework. The current study found that psychological factors play an important role in the occurrence and prognosis of diabetes. The positive psychologist can also use these to boost the level of hope, optimism, and resilience of the patients and address to family members of the patient to prevent and minimize the stress which results in less productivity and pessimism.

References

Abraham, A. M., Sudhir, P. M., Philip, M., & Bantwal, G. (2015). Illness perceptions and perceived barriers to self-care in patients with type 2 diabetes mellitus: an exploratory study from India. International Journal of Diabetes in Developing Countries, 3(5), 137-144.

Adeeb, M., Saleem, M., Kynat, Z., Tufail, M. W., & Zaffar, M. (2017). Quality of life, perceived social support and death anxiety among cardiovascular patients. Pakistan Heart Journal, 50(2), 84-88.

Ali, S., Stone, M., Skinner, T. C., Robertson, N., Davies, M., & Khunti, K. (2010). The association between depression and health-related quality of life in people with type 2 diabetes: a systematic literature review. Diabetes/Metabolism Research and Reviews, 26 (2), 75-89.

Alshelleh, S., Alhawari, H., Alhouri, A., Abu-Hussein, B., & Oweis, A. (2023). Level of depression and anxiety on quality of life among patients undergoing hemodialysis. International Journal of General Medicine, 16, 1783-1795.

Brandle ,M., Zhou, H., Smith, B.R., Marriott, D., Burke, R., Tabaei, B.P., Brown, M.B., & Herman, W.H.(2003). The direct medical cost of type 2 diabetes. Diabetes Care. 26(8):23-40.

Cairney, J., & Krause, N. (2005). The social distribution of psychological distress and depression in older adults. Journal of aging and health, 17(6), 807-835.

Caron, J., & Liu, A. (2011). Factors associated with psychological distress in the Canadian population: a comparison of low-income and non low-income sub-groups. Community mental health journal, 4(7), 318-330.

Cella, D., & Nowinski, C. J. (2002). Measuring quality of life in chronic illness: the functional assessment of chronic illness therapy measurement system. Archives of physical medicine and rehabilitation, 83(2), 10-17.

Centers for Disease Control and Prevention (2004). The burden of chronic diseases and their risk factors: National and state perspectives. U.S. Department of Health and Human Services. Centers in 2008. The journal of toloo-ebehdasht 7(1), 30-36.

D'Arcy, C., & Siddique, C. M. (1984). Psychological distress among Canadian adolescents. Psychological Medicine, 14(3), 615-628.

Egede, L. E., Zheng, D., & Simpson, K. (2002). Comorbid depression is associated with increased health care use and expenditures in individuals with diabetes. Diabetes care, 25(3), 464-470.

Farran, C. J., Herth, K. A., & Popovich, J. M. (1995). Hope and hopelessness: Critical clinical constructs. Sage Publications, Inc.

Flanagan, J. C. (1978). A research approach to improving our quality of life. American psychologist, 33(2), 138.

Flesia, L., Adeeb, M., Waseem, A., Helmy, M., & Monaro, M. (2023). Psychological distress related to the COVID-19 pandemic: The protective role of hope. European journal of investigation in health, psychology and education, 13(1), 67-80.

Folkman, S., & Greer, S. (2000). Promoting psychological well-being in the face of serious illness: when theory, research and practice inform each other. Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer, 9(1), 11-19.

Helgeson, V. S., & Novak, S. A. (2007). Illness centrality and well-being among male and female early adolescents with diabetes. Journal of pediatric psychology, 32(3), 260-272.

Herth, K. (1992). Abbreviated instrument to measure hope: development and psychometric evaluation. Journal of advanced nursing, 17(10), 1251-1259.

Horwitz, A.V. (2002). Outcomes in sociology of mental health and illness. Where we have been where are we going. Journal of Health Social Behavior, 43,143-151.

Jorm, A. F., Nakane, Y., Christensen, H., Yoshioka, K., Griffiths, K. M., & Wata, Y. (2005). Public beliefs about treatment and outcome of mental disorders: a comparison of Australia and Japan. BMC medicine, 3(2), 1-14.

Kauffman, C. (2006). Positive psychology: The science at the heart of coaching. Evidence based coaching handbook: Putting best practices to work for your clients, 219, 253.

Kennedy, E., Powell, R.(1996). Changing eating patterns of American children: a view from 1996. Journal of American Psychological Association, 16 (6), 524-529.

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., ... & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. Archives of General Psychiatry, 60(2), 184-189.

King, H., Aubert, R. E., & Herman, W. H. (1998). Global burden of diabetes, 1995–2025: prevalence, numerical estimates, and projections. Diabetes care, 21(9), 1414-1431.

Leventhal, H., Weinman, J., Leventhal, E. A., & Phillips, L. A. (2008). Health psychology: The search for pathways between behavior and health. Annu. Rev. Psychol., 59 (1), 477-505.

Lin, E.H.B., & Von Korff, M. (2008). Mental disorders among persons with diabetes: Results from the world mental health surveys. Journal of Psychosomatic Research, 6(5), 571-580.

Lori, M.B.(2003). Life, AGE-general quality of life in youth with type 1 diabetes. Diabetes

Majani, G., Pierobon, A., Giardini, A., Callegari, S., Opasich, C., Cobelli, F., & Tavazzi, L. (1999). Relationship between psychological profile and cardiological variables in chronic heart failure. The role of patient subjectivity. European heart journal, 20(21), 1579-1586.

Martínez, Y. V., Prado-Aguilar, C. A., Rascón-Pacheco, R. A., & Valdivia-Martínez, J. J. (2008). Quality of life associated with treatment adherence in patients with type 2 diabetes: a cross-sectional study. BMC Health Services Research, 8(5), 1-10.

Mazloomy, S.S., Mirzaei, A., & Mohammadi, S. (2008). Study of Depressive disorder Prevalence in the Patients with Type II Diabetes Referring to Yazd Diabetes Research

Myer, G. D., Ford, K. R., Paterno, M. V., Nick, T. G., & Hewett, T. E. (2008). The effects of generalized joint laxity on risk of anterior cruciate ligament injury in young female athletes. The American journal of sports medicine, 36(6), 1073-1080.

Myklestad, I., Røysamb, E., & Tambs, K. (2012). Risk and protective factors for psychological distress among adolescents: a family study in the Nord-Trøndelag Health Study. Social psychiatry and psychiatric epidemiology, 47, 771-782.

Najmeh, H.(2011). The effectiveness of stress management training based on behavioral and

Nichols, G.A., & Brown, J.B. (2003). Unadjusted and adjusted prevalence of diagnosed depression in type 2 diabetes. Diabetes Care, 26(3), 744-749.

Noreen, A., Khan, M. L., Hafeez, S., Aidoune, Y., & Shibli, N. (2023). Translation and validation of adult hope scale among Pakistani university students. Social Evolution and History, 12(2), 467-479.

Parveen, Z. (2013). Emotional intelligence and quality of life in cardiovascular patients.

Paul, C., Ayis, S., & Ebrahim, S. (2006). Psychological distress, loneliness and disability in old age. Psychology, Health & Medicine, 11(2), 221-232.

Phongsavan, P., Chey, T., Bauman, A., Brooks, R., & Silove, D. (2006). Social capital, socio-economic status and psychological distress among Australian adults. Social science & medicine, 63(10), 2546-2561.

Rapley, M. (2003). Quality of life research. Quality of Life Research, 1-286.

Roupa, Z., Koulouri, A., Sotiropoulou, P., Makrinika, E., Marneras, X., Lahana, I., & Gourni, M. (2009). Anxiety and depression in patients with type 2 diabetes mellitus, depending on sex and body mass index. Health Sci J, 3(1), 32-40.

Rubin, R., & Peyrot, M. (2001). Psychological issues and treatments for people with diabetes. Journal of Clinical Psychology, 57(4), 457-478.

Salovey, P., Rothman, A. J., Detweiler, J. B., & Steward, W. T. (2000). Emotional states and physical health. American Psychologist, 55(1), 110-121.

Scheier, M. F., Matthews, K. A., Owens, J. F., Schulz, R., Bridges, M. W., Magovern, G. J., & Carver, C. S. (1999). Optimism and rehospitalization after coronary artery bypass graft surgery. Archives of internal medicine, 159(8), 829-835.

Sher, A., Hussain, S., & Adeeb, M. (2023). Psychological Distress and Life Satisfaction during COVID-19 Pandemic among Pakistani University Students: The Protective Role of Spiritual Intelligence. Review of Applied Management and Social Sciences, 6(2), 501-513.

Shoback, edited by David G.Gardner Dolores. (9Ed). (2011). Green span basic and clinical endocrinology (9th Ed.). New York:McGraw –Hill Medical.

Snyder, C. R., Rand, K., King, E., Feldman, D., & Woodward, J. (2002). False hope. The Journal of Clinical Psychology, 58(9).

Steptoe, A., Wardle, J., & Marmot, M. (2005). Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes. Proceedings of the National Academy of Sciences, 102(18), 6508-6512.

Størksen, I., Røysamb, E., Holmen, T. L., & Tambs, K. (2006). Adolescent adjustment and well-being: effects of parental divorce and distress. Scandinavian Journal of Psychology, 47(1), 75-84.

Terris, M. (1991). The health situation in the Americas. Journal Public Health Policy, 12(3), 362-77.

Varghese, R. T., Salini, R., Abraham, P., Reeshma, K. K., & Vijayakumar, K. (2007). Determinants of the quality of life among diabetic subjects in Kerala, India. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 1(3), 173-179.

Walters, V., McDonough, P., & Strohschein, L. (2002). The influence of work, household structure, and social, personal and material resources on gender differences in health: an analysis of the 1994 Canadian National Population Health Survey. Social Science & Medicine, 54(5), 677-692.

Winer, N., & Sowers, J. R. (2004). Epidemiology of diabetes. The Journal of Clinical Pharmacology, 44(4), 397-405.