Moderating Role of Internal Locus of Control on relationship of Life Satisfaction and Quality of life among Diabetes Type-II Patients

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The present study focused on type II Diabetes patients in terms of their subjective wellbeing (QoL), life satisfaction (LS) and their sense of control over disease (Internal Locus of Control, ILoC). For this purpose, 100 (N=100) diagnosed diabetic patients were approached through purposive sampling technique. The results showed a significantly positive correlation among the variables of the study i.e. quality of life, life satisfaction and internal locus of control but the moderating role of internal locus control has been found insignificant on the relationship of perceived wellbeing and life satisfaction. The findings suggests that the three factors are strongly correlated with each other but internal locus of control does not possess any moderating role and quality of life alone has significant impact on life satisfaction of the patients. Thus, by improving the perceived quality of life, the life satisfaction among the patients can be achieved .

Keywords: type II diabetes, subjective wellbeing, quality of life, life satisfaction,

Diabetes is a life-long disease that affects the way of body handling to glucose in the blood. Most people have type-II Diabetes, the onset of which usually occurs in mid age. Human pancreas release Insulin (hormone) that transforms the glucose from the food into energy. In Type-II diabetes, the body cells do not use insulin to transform glucose into energy thus it is also called Insulin resistance or does not produce enough insulin to maintain a normal glucose level. Many factors lead to develop the disease as genes, obesity, metabolic syndromes, over-secretion of glucose from liver and broken beta cells etc. (Type 2 Diabetes: The Basics, 2018). The major symptoms include increased thirst, fatigue, blurred vision, weight loss, frequent urination and slow healing sores of frequent infections (Type 2 Diabetes, 2018).

Initially, type-II diabetes can be well handled with precautions and appropriate dietary plans but as it gets chronic, it leads to cause serious complications in the body especially damaging heart, nerves, blood vessels, kidneys and eyes. Although these long term complications develop over a time but in the end they could be fatal (Type 2 Diabetes, 2018). The progression of the disease impose a

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constant struggle and challenge in life both psychologically and physically to cope with every passing day.   The struggle towards coping to the challenges of the disease do come with individual differences and every person handles it differently as per their own psychological and mental states. The constant struggle to the life threatening disease impacts individual's quality of life, satisfaction towards life and the way of perception towards illness (Internal/external).

Quality of life (QoL) is defined as the one's opinion about their life in reference to culture and values in which the person is living to achieve his/her expectations, goals, concerns and standards. Thus quality of life not only includes perceptions about physical health but the matters of psychological states, level of person's social life, independence and personal beliefs. Quality of life caters the measure of four domains of individual's life that are health conditions, social, economic status (physical and mental health perceptions) and perceptions that influence health perceptions and functional status (community level resources). In nut shell quality of life can be defined as the perceived physical and mental health over time (Trikkalinou, Papazafiropoulou & Melidonis, 2017). QoL in diabetes is the assessment of perception towards the disease by the patients about living with illness (Polonsky, 2000). Varied diabetic conditions and features among patients develops critical global individual perception in respect to quality of life as diabetics do face challenges on physical functions, psychological states and social relationships (Von et al, 2005). These mechanisms affect the QoL and Illness perception of the patients. Diabetes in itself is a life style changing disease including drugs, diet, frequent medical examinations and serious complications. (Davis et al., 1999).Physicians ascertain diabetes as the most common chronic condition involving primary health care management (Little & Margettes, 1996; Brown, Harris, Webster, Westmore, Faulds, & Stewart, 2002). In such management, patients has to schedule frequent visits to the doctor for diabetic care (Harris, Stewart, Belle, Westmore, Faulds & Webster, 2003), self-management strategies, scheduled medicinal intake and to adapt appropriate life style choices (Health Canada, 2003). All such factors affect the quality of life of the person.

Measuring quality of life is actually assigning a value to the extent of life adapted by disease specific to impairments, human functional states and social occupational aspects of a person (Shumaker & Naughton, 1995). QoL can be said as the dignified way of explaining about the personal perceptions about the illness and its effects on the living (Polonsky, 2000) that can be effected by differences in clinical features of diabetes along with complications that effects/formulate a global individual perception about the quality of life. Moreover, other than psychological burdens and conditions, other components including personal, socioeconomic and demographic variable even gender too can affect the perception towards QoL (Wandell, 2000).

Inadequate blood glucose levels leads to hypo and hyper glycaemic conditions which increases the risk of prolonged impediments and in turn affect the perceptions quality of life among patients. The conditions of hypo and hyper glycaemia develops due to non-compliance towards treatment or lack of understanding towards recommendations towards its prevention and control, the ultimate of which produce chronic complications thus affecting quality of life. Moreover constant fears related to chronic conditions also decreases perceptual quality of life (De Souza et al., 2015; Trento et al., 2013)

The related phenomenon to quality of life is life satisfaction that has been defined as Life contentment an individual possess in his/her life (Ardahan & Mert, 2013). It is a measure of wellbeing as cognitive and global judgment which refers to a person's attitude towards life as a whole (Kaku,

2010). Recent study revealed that patients reported low life satisfaction with associated risk factors of diabetes (Baumann, Tchicaya, Lorentz & Le-Bihan, 2015). The adapting health behaviors related to disease are felt as unpleasant which affects life satisfaction ultimately. A longitudinal study revealed that individuals who followed strict diet and medicinal patterns over a period of years reported unpleasant life style behaviors. Avoiding carbohydrate rich food increases the healthy life style behaviors which patients with diabetes cannot enjoy and thus lead to dissatisfaction from life. Diabetics are advised to follow strict dietary patterns and a routine comprising of physical activities which with the leading time becomes difficult to follow for them. The dietary plans also include healthy eating and reducing sugar intake which ultimately decreases the risk factors associated with the disease. The strict dietary patterns and controlled behavioural regimes, affects diabetics both emotionally and psychologically and thus produce psychological difficulties that ultimately leads to dissatisfaction with life (OECD, 2015).

Research proclaims that not only illness itself relates to life satisfaction but the comorbid factors of quality of life as levels of stress, physical limitations, disease related complications and social and economic constraints comes in vicious cycle that ultimately produce dissatisfaction with life (Legrand, Serruys, Unger, Van Hout, , Vrolix, & Fransen, 2004). Guney (2009) added the psychological factors related to wellbeing in developing perception towards life satisfaction

Among many of the psychological components, locus of control in disease management is getting its worth day by day. This term was initially coined by Rotter (1990) in explaining the probability of a behaviour occurrence in a given situation as per one's expectations or to the value an individual attributes to that behaviour. In other words locus of control is a person's source of control to the events (DeLa-Coleta & DeLa-Coleta, 1996). This may include external sources as luck or the internal sources based in human learning, thus individual become capable of perceiving the source of the event and control over it. When individual perceives events as dependant on their own stable characteristics, it is a belief of internal control. On the contrary the perception for events and behaviors as controlling externally as fate, chance and luck etc. is the perceived ability of external locus of control (Rotter, 1990). Research reports (Levenson, 1974) that individuals having perceived internal locus of control act differently than those who have external sense of control and it is believed that individuals with external locus of control behaves in more chaotic unpredictable ways.

Individuals having internal locus of control believes that their own efforts and dedication can bring changes around them and in their conditions thus implicating the future as one's own responsibility. Such belief does make them more confident, strong and motivates to get control over illness. On the contrary, individuals with external locus of control, possess a belief that the events are beyond their control and whatever is happening is just a matter of fate, destiny, luck, in the control of powerful others or unpredictable. Such individuals have been found to be very passive with a perceived sense of helplessness, does not try to change their conditions and believes that they can do nothing with the matters/events they are facing by (Rotter, 1990).

Control over diabetic conditions can improve the quality of life through behavioural planning. Behavioural planning theory explains the behavioural control as the intended behavioural actions in order to control the diabetic conditions. For behavioural control the locus of control plays its role. In this respect a study reported that majority of Diabetics were having the intentions to control the symptoms through internal locus of control indicating that locus of control significantly affect the behavioural strategies among diabetics to gain control over conditions and disease. The

implications of the study suggested the needful provision of positive support and information to achieve a control over the symptoms of the disease (Haskasa, Suryantob & Widodo, 2016).

Walker (2001) in his study proved the positive relationship of health with health conditions. When an individual can handle his life conditions due to a disease or health condition, such person calls as in control. This control regulates the health related behaviors and conditions. Individuals vary in these perceptions of control (Wallston, 2001). Research proved the adequate self-control (internal locus of control) promotes quality of life and external factors leads to loss of control over diabetic conditions and health related issues thus reduce the perceptual quality of life at the part of the patient (Sharifabad, Mahmoodabad, Moghandam, Tonekaboni, Sdooghi & Mazandara, 2009). It is concluded that perceived control over health related issues lead to good health behaviors (Taylor, 2009).

Humbold, Leal, Santos and Niculescu (2013) studied the relationship of quality of life with life satisfaction among diabetes patients in terms of socio demographic characteristics, duration of illness and affects. The results revealed that low quality of life ultimately leads to low life satisfaction. Rubin and Peyrot (1999) explained that control of diabetic symptoms produces satisfaction over the factors related to quality of life and it was observed that patients with high scores on quality of life responds high on satisfaction with life.

Further studies revealed that chronic illness conditions, negatively affects quality of life. Such individuals are at higher risk of low self-esteem, depression and other physical diseases (Ali, Stone, Skinner, Robertson, Davis & Khunt, 2010). Moreover diabetes has been shown an association with low happiness and reduced life satisfaction (Connel, Storandt & Litchty, 1991). Moreover Easrterlin (2006) proposed that better physical conditions, good mental health and supportive socio and economic factors leads to promote life satisfaction.

Rationale of the study
Diabetes is a life threatening disease which progress slowly and its prevalence is increasing day by day around the globe. The disease not only bring damages to anatomy and physiological mechanisms among patients but also increase many psychological risk factors. The QoL caters perceptions towards health conditions, social and economic status and community level resources that help to cope with the disease. In essence these four domains are basic for a healthy life style and living. In their absence a person could have dissatisfaction with life. An individual perceive his health conditions, social and economic conditions along with community resources with some specific attributes that can be internal or external. Therefore this study attempted to understand the relationship of QoL, Life Satisfaction and the perceptual attributes towards both. Having the probability of relationship and in the light of aforementioned literature (Humbold et al., 2013; Rubin & Peyrot, 1999; Ali et al., 2010; Connel, Storandt & Litchty, 1991; Easrterlin, 2006), it has been assumed that there exist a strong correlation among Quality of life (QoL), Life Satisfaction (LS) and Internal locus of control (ILoC) and Internal Locus of control does play a moderating role in improving quality of life that ultimately lead to higher life satisfaction.

Objectives of the study:
1. To understand the relationship among quality of life, life satisfaction and internal locus of control.
2. To analyse the impact of internal locus of control on the relationship of quality of life and life satisfaction.

Hypotheses:
1. There will be a positive correlation among Quality of life, Life Satisfaction and Internal Locus of Control.
2. Patients with high scores on quality of life scale will score high on life satisfaction in the presence of internal locus of control.

Method

Sample

Purposive sampling technique was used to approach 100 patients (N=100) diagnosed with Diabetes-II disease among which 50 were male (n=50) and the other 50 were females (n=50) from age range of 30 – 60 years. The calculated mean age was found as 53 years with a mean duration of illness of 10 years. The data was collected from the private clinic of endocrinologist in Dabgari Garden, Peshawar.

Inclusion Criteria:
Patients suffering from Diabetes-II were included in the study.
Exclusion Criteria:
Patients of other endocrine diseases were excluded for the study.
Demographic Sheet:
A demographic sheet was developed for gathering the basic information about the patient including their name, gender, age, marital status, education, occupation, onset of disease, socio economic status and duration of illness.

Instruments:
Life Satisfaction Scale (LSS):

Life satisfaction scale is a five items, seven point likert scale developed by Diener et al., (1985) for measuring life satisfaction in a range of strongly agree to strongly disagree. The determined reliability of the scale has been reported as 0.82 coefficient alpha, showing strong internal reliability.

In the present study, Urdu version of the scale has been used developed by Butt, Ghani and Khan from department of Psychology, GC University, Lahore, Pakistan in 2014.

Quality of Life Scale (QoL):

The WHO Quality of Life- BREF Scale was introduced in 1998 by World Health Quality of Life Group. It is a 26 item scale and analyse the effects of disease/disability on the subjective wellbeing of the patient. It is sub-categorized as physical health, psychological, social relationships and environment. The overall score on these domains reflects the perception about quality of life. For the purpose of the present research, the researchers used the Urdu version of the scale in the study (Khan, Akhtar, Ayub & Laghari, 2003), contains a significant high values of Alpha reliability (.88). Overall score range is 1 to 130, the higher scores on the scale denotes higher quality of life.

Levenson Multidimensional Locus of Control Scale:

The present study used the translated urdu version of Multidimensional locus of control scale developed by Levenson (1974) adapted in Urdu language by Younas (2003). The scale is a 6 point likert scale including 24 items, comprising 3 domains of Locus of Control i.e. internal, external and control of powerful others. Each domain can be measured by 8 assigned items to each category. The responses range from strongly disagree (weighted as 1) to very strongly agree (weighted as 6). The Kuder-Richardson reliability coefficient of the internal locus of control has been determined as 0.64, for powerful others is 0.77 and for external control is 0.78. Split half reliability for internal locus of control was 0.62, powerful others as 0.66 and external control as 0.64.

Procedure

The study was conducted to understand the relationship between perceived quality of life and satisfaction with life in presence of internal locus of control as a moderating factor among type-II diabetes patients. For the study, the participants were recruited through a purposive sampling technique. After explaining the objective of the study, we have obtained written informed from each participant to participate in the study, they were ensured about the confidentiality and significant appliance of the procedure. The responses were gathered on the three scales from each participant individually. After collecting the data the statistical procedures were applied by using Statistical Package of Social Sciences (SPSS 20) through calculating correlation and Regression analysis by means of Process Mac Software.

Results

The result section is elaborating the correlation among quality of life, life satisfaction and internal locus of control with the values explaining a significant positive correlation among the variables. Moreover the other table is revealing that internal locus of control (ILoC) does not play any moderating role in the relationship of quality of life (QoL) and life satisfaction (LS) which means that quality of life alone impacts the life satisfaction without moderating effect of internal locus of control.

Table 1

Co-relation between Quality of Life (QoL), Life Satisfaction (LS) and Internal Locus of Control (ILC)

Scales	TLS	TQoL	TILC
TLS	1	.731**	0.279**
TQoL	.731**	1	0.425**
TILC	0.279**	0.425**	1

Note: TLS= Total Score on Life Satisfaction Scale, TQoL= Total Score on Quality of Life Scale, TILC= Total Internal Locus of Control
***p<0.001, **p<0.01, *p<0.05

According to table 1, there exist a positive correlation between Life satisfaction (TLS), Quality of Life (TQoL) and Internal Locus of Control (TILC) (p= .000). The results reveal highly significant positive correlation of Life satisfaction with quality of life (.731**) and Internal locus of control (.279**). Similarly quality of life possess a positive correlation with life satisfaction (.731**) and Internal locus of control (.425**) while internal locus of control is revealing the same significant positive correlation with life satisfaction (.279**) and quality of life (.425**). The overall findings are concluding that the three variables are positively correlated with each other thus proving hypothesis 1.

Table 2

Moderating effect of Internal Locus of Control (ILoC) on the relationship between Life Satisfaction (TLS) and Quality of Life (TQoL)

Predictor	B	p	LL	UL
			LS	
			95% CI	
Constant	-2.05	.90	-35.47	31.36
ILoC	-.00	.98	-.99	.98
QoL	.32	.12	-.08	.74
QoL* LoC	-.00	.92	-.01	.01
R2	.5352			
ΔR2	.0000			
F	36.84			
Δ F	.00			

Note: QoL= Quality of Life, ILoC= Internal Locus of Control, QoL*ILoC= Interaction Variable, LS=Life Satisfaction, p>0.05

To test the moderating impact of Internal Locus of Control (ILoC) on the relationship of Quality of Life (QoL) and Life Satisfaction (LS), the Process Procedure has been used. For the said purpose, Macro to SPSS was installed to test Moderation. The independent variable explains 74% variance (R= .73, F= 36.84, p=.000) in dependant variable but after introducing the moderator the interaction effect was not significant. It means that internal locus of control (ILoC) does not moderate the relationship between Quality of Life (QoL) and Life Satisfaction (LS). The impact of interaction variables (ILoC & QoL on LS) was not significant (R^2 Change = .0000, F= .00, p= .9229). Therefore the results in table 2 are not supporting the hypothesis 2 and it reveals that internal locus of control (ILoC) does not play any moderating role on the relationship of quality of life (QoL) and Life Satisfaction (LS).

Discussion

In the past few decades, Pakistan is amongst the countries reportedly evident high prevalence of diabetes (Custon & Bongiorni, 1996). Through an estimation, it has been revealed that by 2030 Pakistan would be amongst 4th largest country in occurrence of diabetes. In a survey, it is reported that currently there are almost 15 million individuals diagnosed as diabetic in Pakistan which is approximately 15% of the whole population. Further estimation predicts that 48 million people, including 22.8% females and 17% males are pre diabetic which is an alarming condition and needs a great attention of the practitioners (Custon & Bongiorni, 1996; WHO, 2018). Diabetes Mellitus type –II, has been found as a leading cause of mortality and deaths world widely as it leads to devastating outcomes in chronic conditions including hospitalizations, renal failure, traumatic amputation and blindness etc. The occurrence of peripheral diabetic neuropathy is also a comorbid condition which is a state causing amputations and occurred almost amongst 50% of the population in chronic conditions of the disease. Diabetes II is a major disability causing disorder and sustains a massive damage if not taken care appropriately and neglected. Rubin and Peyrot (1999) reported lower quality of life among diabetics than the average population of the same age group and revealed that quality of life decreases with age, disease complications and use of insulin. The same was confirmed by Jonsson (2002) and Ribu, Hanestad, Moum, Birkeland and Rustoen (2007) who further related it to the socio economic implications. Individuals with diabetes usually report poor health

conditions as compared to other individuals not having the disease (Rose, Burert, Scholler, Schirop, Danzer & Klapp, 1998).

The present study was designed to investigate the relationship among Quality of life, life satisfaction and internal locus of control in type II diabetes patients. Moreover it further focused on the understanding of role of internal locus of control as a moderator on the relationship of quality of life and life satisfaction. In the results section, table 1 is indicating the correlation among the three variables i.e. Quality of Life (QoL), Life Satisfaction (LS) and internal locus of control (ILoC) and reveals that all the three variables are significantly correlated to each other (.731[**], .279[**] and .425[**]). A study revealed the relationship of Life satisfaction with lifestyle and concluded that clinical risk factors specifically diabetes do effect the life style factors (social, economic and psychological) that ultimately affects perception towards life satisfaction. It was further observed that a weak association is usually obvious in life satisfaction and disease (Diabetes) thus indirectly confirming the low perceived quality of life that leads to the development of stress, depressive symptoms, anger, hostility, sleep problems and anxiety etc. Dissatisfied individuals with life shows poor life styles that results in increase in risk factors related to disease (Pouwer, Kupper and Adriaanse, 2010). The relationship between life satisfaction and domains of quality of life have been derived as bidirectional as life satisfaction affects quality of life and vice versa (Grant, Wardle & Steptoe, 2009). Theory suggest that positive affect and attitude towards life promote healthier life style, immune function, social support and psychological factors (Lyubomirsky, King & Diener, 2005; Pressman & Cohen, 2005). Another theory propose that positive affect towards life along with related social environment promotes the development of social, psychological and physiological mechanisms thus promoting quality of life in other words (Pressman & Cohen, 2005).

As Life satisfaction and quality of life has been found as the main associated factor with type II diabetes, it was found that the disease does produce negative impact on quality of life and this also has a bidirectional link with each other, means the decrease in symptoms will produce high quality of life and vice versa (Polonsky, 2002).

Researches on locus of control do show a significant relationship of the factor with subjective wellbeing by concluding a significant relationship between expectancy of locus of control and the level of happiness with the social psychological factors related to wellbeing. Literature reveals that external locus of control negatively correlates to quality of life and leads to depression and sense of learned helplessness and powerlessness (Marks, 1998, Tourn & April, 2006). This confirms the negative correlation between external locus of control and subjective well-being, thus higher the externality, the result is lower levels of well-being. In counter condition, it can be derived that higher the internality, higher would be the subjective wellbeing and thus confirms a positive correlation between the two variables.

Academic literature frequently presents internal locus of control as exclusively attributed to traits that allows a person to have a sense of success and control and thus promote the control over factors of subjective wellbeing which conclusively derive a positive relationship between the two (Anderson & Schneier, 1978). In the light of literature, a positive and significant relationship can be confirmed among life satisfaction, subjective well-being/quality of life and internal locus of control in relation to diabetes.

The other hypothesis of the study focused on the role of internal locus of control as moderator on the relationship between quality of life and life satisfaction. Table 2 in the result section is revealing the findings which is reflecting a weak impact of internal locus of control on the relationship of quality of life and life satisfaction. Means the relationship between QoL and LS does not get a significant impact if the individual start perceiving the control over the disease. Thus it can be concluded that alone QoL has a potential significance and obvious effect on life satisfaction. Means even in the absence of locus of control i.e. either external or internal, if the perceived wellbeing of individual is high, the life satisfaction will also be high. Therefore even having a significant positive correlation with LS and QoL, the ILoC does not have any impact on the relationship of the two. Therefore it can be concluded that although locus of control has its significance in the terms of perceived wellbeing and life satisfaction but alone if quality of life is higher enough, it would produce higher sense of life satisfaction without consideration of the system of locus of control, whether external or internal.

Conclusion

Through findings it has been concluded that a positive correlation exist among Quality of life, life satisfaction and internal locus of control. Moreover, the internal locus of control does not produce any impact on the relationship of QoL and LS which can be understood as alone quality of life (QoL) has strong impact on satisfaction with life without the way of attribution to control the disease. Means with higher quality of life the individual will have higher perception of life satisfaction and similar would be wise versa.

Implications

A significant implication of the study is for the policy makers while dealing with the patients of type –II diabetes. As early stated in the literature (WHO, 2010), Pakistan is amongst the 4th largest population who are diabetic and have at higher risk of being pre diabetic which is worrisome condition for future prospects. Therefore this data can be used by policy makers to improve the quality of life of the diabetic patients so as to achieve a higher sense of life satisfaction and to ultimately achieve a control over devastating effects usually produced by the disease on individual's life.

Limitations and Suggestions of the study

1. The study comprised most of the quantitative data on specific scales, measuring the variables. For future researches, the qualitative data should also be collected in terms of detailed information by conducting interviews with the patients in terms of aspects of quality of life, the significance of locus of control and how it effects their perceptions towards quality of life and life satisfaction in coping with the disease.
2. From the available data, some of the variables are not able to calculate as mode of medication (tablets, insulin or some other combination of treatment approaches) which are the coping strategies to disease and can affect the study variables ultimately. For future researches it has been suggested to evaluate such variables as well.

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