RISK PERCEPTION, MEDICATION ADHERENCE AND DEPRESSION AMONG DIABETIC PATIENTS

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Abstract
Aims. *The aim of the present research was to study the association between risk perception, medication adherence and depression among diabetic patients.* **Methods.** *Risk Perception Survey-Diabetes Mellitus, Adherence to Refills & Medication Scale and Revised Beck Depression Inventory were used to assess variables under study. Data was collected from (n=150) diabetic patients. Correlational research design was used in the present study.* **Results.** *Correlational analysis revealed there is a highly significant positive relationship between risk perception and depression, as well as medication adherence has significant positive relationship depression. Results also revealed that risk perception and medication adherence were significant predictors of depression. Findings revealed that depression score was higher in females as compare to males.* **Conclusions.** *It is evident from the present study and prior studies that diabetes patients who have high level of medical adherence leaded them towards low level of depression. The present research offers valuable information for future generations of researchers and health care providers.*

Keywords: *Risk Perception, Medication Adherence, Depression, Diabetic Patients*

1.1 Introduction

Diabetes is an important problem so, there is a clear cut need to investigate problems that diabetic patients face. In this study we examined about perceptions of diabetic patients related to risk about health because as stated above diabetes is a chronic disease and there are many patients who perceived risk about their physical conditions. According to research overall 39.19% individuals are suffering from diabetes in Pakistan (Jwad & Maqsood, 2007). As per previous researches about adherence of medication, patients who had satisfaction with their medications are happy with their treatment and it leads them to had no psychological issues e.g., depression, anxiety and stress etc., while in case of poor medication adherence there were more chances to had psychological problems. Therefore, the present study has been designed to investigate how it further increase or decrease depression among diabetic patients.

1.1 Risk Perception

Risk perception is the personal decision that individuals make about the characteristics and severity of a risk (Starr, 2005). Illness perception refers to an individual's cognitive and emotional representations of illness (Leventhal, Phillips & Burns, 2016). It is influenced by perception of illness identity (i.e., the extent to which the illness defines personal identity), cause of illness, duration of illness, consequences of illness, curability of illness, and emotional representations. Inappropriate perception of illness can lead to psychological disorders (Petricek et al., 2009) and a recent study found that maladaptive illness perception was directly associated with depression in diabetes patients (Joshi, Dhungana & Subba, 2015). However, few studies have examined illness perception among T2DM patients in China (Tang & Gao, 2019), and even less attention has been paid to the potential mechanisms underlying the relationship between illness perception and depression.

1.2 Medication Adherence

Medication adherence is defined by the World Health Organization as "the extent to which the individual's behavior communicates with the approved suggestions from a health care provider. Poor adherence to prescribed treatment is able to cause serious health consequences. For example, a current study found that the risk of hospitalization was more than double in patients who were diagnosed with diabetes, hypercholesterolemia, hypertension, or congestive heart failure rather than who were non adherent to prescribed treatment contrast with the general population (Kenreigh & Wagner, 2015).

1.3 Depression

Depression goes by a lot of names, for example "The Blues", "Biological or Medical depression" and "Major Depressive Episode" but all of these names indicate to similar thing: having sad mood and feel depressed for weeks or months. This feeling is frequently escorted by the feelings of hopelessness, lack of energy and taking little or having no enjoyment in things that once gave an individual feeling of pleasure in the past (Grohol, 2013). The relationship between diabetes and depression is complex and bidirectional (Pan et al., 2010). Depression reduces physical activity, fosters unhealthy diets, depletes motivation to self-manage health, and activates neuroendocrine and inflammatory pathways that increase insulin resistance (*Rustad, Musselman & Nemeroff, 2011*). Diabetes requires major lifestyle changes, carries a high risk of medical complications, and is associated with structural brain changes, all of which may cause depression (*Egede, Grubaugh & Gen, 2010*).

1.4 Rationale of the Study

The aim of the present research was to study the relationship between risk perception, medication adherence and depression among diabetes patients. There are less studies conducted on diabetes patients with risk perception, medication adherence and depression in Pakistan, and that is why there is need to work on this domain to complete this gap. And the present research is an effort to fulfilling this gap. The present study was directed to assist diabetes patients to understand in what way risk perception and medication adherence play a significant effect on the depression among diabetes patients. The main purpose of the current study was to provide insight to societal and clinical setting about risk perception and its effect on the psychological depression among diabetes patients. Though, a positive sense of medication adherence the present study was crucial for personal's development in relations of communication, reduce risk perception, understandings and diminished depression. Therefore, the core aim of the current research is to provide insight to people, social workers and policy makers especially mental health professionals to understand that how much medication adherence show a significant influence on the depression among diabetes patients. This insight information can be particularly useful for mental health professionals that provides mental health care services, as well as, for policy makers who make strategies and polices for better psychological wellbeing in the society.

2. Method

2.1 Research Design

Correlational research design was used in present study.

2.2 Sample and Sampling Strategy

Purposive sampling strategy was utilized to recruit sample of (n=150) diabetes students.

2.3 Procedure

Firstly, researcher got official ethical clearance letter from University. Consent was taken from the authors of scales. Researcher prepare the booklet comprising on the informed consent hold demographic sheet and scales, provided to the members and collect data then pilot study and main study was conducted.

2.4 Assessment Measures
2.41   Risk Perception Survey-Diabetes Mellitus (RPS-DM)
Risk Perception Survey Diabetes Mellitus was developed by Walker (2003) in order to measure risk perception of diabetic patients. It consists of 4-point likert-type scale with 31 items. The alpha reliability of this scale was .88. The alpha reliability of this scale in the present study is (α=.68).

2.4.2 Adherence to Refills & Medication Scale (ARMS)
Adherence to Refills & Medication scale was developed by (Kirplani, 2009) to assess medication adherence. In present study original version of the scale was used. It is 5 likert-type scale with 12-items. The alpha reliability of this scale was reported to be.81. The alpha reliability of the scale in the present study is (α=.68).

2.4.3 Beck Depression Inventory (BDI-II)
Beck depression inventory is self-report measure which was originally developed by Beck (1978), then revised in 1996 and also translated in different languages as well. It is 4-point likert type scale from 0 to 3 ranges with 21 items. The alpha reliability of this scale was reported .84.

3. Results
Table 1
Pearson Product Moment Correlation Analysis between Study Variables among Diabetes Patients (n=150)

	Variables	**1**	**2**	**3**
1.	Risk Perception	-	.76**	.53**
2.	Medication Adherence	-	-	.56**
3.	Depression	-	-	-

** $P < 0.01$, *$P < 0.05$

Results showed that risk perception has significant ($p < .05$) positive relationship with depression among diabetes patients. However, medication adherence has significant ($p < .05$) positive relationship with depression among diabetes patients.

Table 2
Hierarchal Regression Analysis Used to Predicting Depression (n=150)

	Depression	
	Diabetes Patients	
Predictors	ΔR^2	β
Step 1	.27***	
Risk Perception		.24***
Step 2	.33***	
Medication Adherence		.37***
Total R²	34%	

Note: *$p < .05$. ,**$p < .01$. , ***$p < .001$.
a. Dependent Variable: Depression
b. Predictors in the Models: Risk Perception, Medication Adherence.

Results revealed risk perception was significant ($p<.05$) predictor $F_{(1, 148)} = 58.74$ $p < .05$, R^2= .28 and accounted for 28% of variance in depression. Moreover, medication adherence was significant ($p<.05$) predictor $F_{(2, 147)} = 37.94$ $p < .05$, R^2= .34 and accounted for 34% of variance in depression.

Table 3

Independent Sample T-Test (n=150)

Gender	t	df	p	Confidence Internal	
				LL	UL
	-4.65	148	.00	-5.71	-2.30

Note. p= Significant Value, df= degree of freedom, LL= Lower Limit, UP= Upper Limit, CI= Confidence Interval

Findings revealed a statistical reliable and significant difference of depression between males (M= 15.02) and females (M= 19.04). Depression score was higher in females as compare to males.

4. Discussion

Results of the present research revealed risk perception has significant positive relationship with depression among diabetes patients. Another research was conducted to construct a conceptual framework for risk perception and depression of people in public health crises. Results showed risk perception and its associated factors significantly affect the mental health of people in public health crises. Findings revealed risk perception is positively associated with depression of people in public health crises (Ding et al., 2020).

In addition, results of the present research showed medication adherence has significant positive relationship with depression among diabetes patients. Another study was conducted to examine a meta-analysis of the association between depression and medication adherence among patients with chronic diseases. Findings showed strong association between depression and medication adherence (Grenard et al., 2011).

Furthermore, findings also revealed risk perception and medication adherence were significant predictors of depression among diabetes patients. Another research was conducted to study the relationship between depression risk perception and self-help behaviors in high-risk Canadians. Findings showed significant prediction between risk perception and depression (Warner et al., 2021). Another study was conducted to examine the Course of Depressive Symptoms and Medication Adherence After Acute Coronary Syndromes. Results showed medication adherence was significant predictor of depression. However, diagnosis and treatment of depressive symptoms may improve medication adherence in patients after ACS (Rieckmann et al., 2006).

Moreover, findings of the current study showed that depression score was higher in females as compare to males. Previous literature also showed that women have more tendencies to have depressive disorder as compare to men (Hoeksema, 2008). Freedland et al. (2003) reported major depression and medication adherence in old patients with coronary artery illness, findings revealed depression in female patients was higher as compare to male which supports the results of current study. Gender differences in depression were reported by Piccinelli (2000).

4.1 Limitations and Recommendations

The sample size of current study was 150. And the sample of current research was short for better understanding. A huge sample size would permit researchers to have more data to evaluate which would provide a better understanding of the topic. It will also improve the validity and reliability of study. When a research is directed with a small sample size there is more margin of error which decreases the validity.

4.2 Conclusions

It is evident from the present study and prior studies that diabetes patients who have have high level of medication adherence leaded towards them to low depression. It is important to understand how these diabetes patients are able to adapt to various changes in their lives, and how environmental, physiological, and psychological factors may affect diabetes patient's risk perception and depression. My hope is that the present research will offer valuable information for future generations of researchers and health care providers.

Acknowledgement

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